

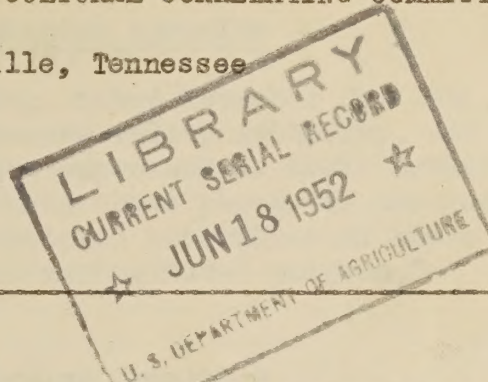
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TENNESSEE VALLEY AGRICULTURAL CORRELATING COMMITTEE

Knoxville, Tennessee



Unnumbered Publication

May 1951

X PROCEEDINGS,

THIRTY-FIFTH VALLEY-STATES CONFERENCE,

Andrew Johnson Hotel, Knoxville, Tennessee

Wednesday, April 11, 1951 X

United States Department of Agriculture; Land-Grant Colleges and Universities of Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia; and Tennessee Valley Authority Cooperating

ACKNOWLEDGMENTS

Cooperating Agencies

Under a Memorandum of Understanding, dated November 20, 1934, the U. S. Department of Agriculture, the Tennessee Valley Authority, and the land-grant colleges of the seven Valley States expressed as their mutual objective in the Tennessee Valley: "To coordinate those phases of the research, extension, land-use planning, and educational activities of these agencies which are related to a unified, regional agricultural program."

Correlating Committee

To facilitate coordinated effort in meeting the problems of the region and to further development of a coordinated program, the Memorandum of Understanding provides for a Correlating Committee to consist of three members and an executive secretary.

Organization. Thomas P. Cooper, Chairman, representing the land-grant colleges; J. C. Dykes, representing the U. S. Department of Agriculture; J. C. McAmis, representing the Tennessee Valley Authority; C. F. Clayton, Executive Secretary.

Valley-States Conference

In order to facilitate discussion of regional problems and to receive advice and recommendations of responsible representatives of the cooperating agencies, the Correlating Committee meets at regular intervals with the deans and directors of the land-grant institutions and with designated representatives of the Department of Agriculture and the Tennessee Valley Authority. This group constitutes the Valley-States Conference. The chairman and the executive secretary of the Correlating Committee serve, respectively, as chairman and secretary of the Conference.

Standing Committees

On request of the Correlating Committee, the Valley-States Conference established three standing committees to which the Correlating Committee may refer problems or proposals for special consideration and recommendations or reports. These committees, established at the meeting of the Conference on April 6, 1949, are the Committee on Plant Facilities and Products, Committee on Water and Land Use, and Committee on Rural Facilities, Services, and Industry. The present membership of these committees is as follows:

Committee on Plant Facilities and Products. C. H. Young, Chairman; Walter S. Brown; Roland Crumpler; N. D. Peacock; C. F. Clayton, Secretary

Committee on Water and Land Use. Frank S. Chance, Chairman; Willis M. Baker; P. O. Davis; T. L. Gaston; C. F. Clayton, Secretary

Standing Committees -Continued

Committee on Rural Facilities, Services, and Industry. R. E. McArdle, Chairman; J. W. Moon; D. S. Weaver; H. N. Young; C. F. Clayton, Secretary

State Contact Officers

The Memorandum of Understanding also provides for the selection of a state contact officer by each of the seven land-grant colleges. The contact officer seeks to inform the college staff regarding the unified regional development program in the Tennessee Valley and to adjust and coordinate the state program with the Valley program.

Contact Officers. S. G. Chandler, Georgia; H. L. Dunton, Virginia; M. E. Weeks, Kentucky; W. D. Lee, North Carolina; E. C. McReynolds, Tennessee; L. A. Olson, Mississippi; R. M. Reaves, Alabama.

Committee on Tennessee Valley Program

To facilitate the work of state contact officers, each land-grant college selects from its faculty a Committee on Tennessee Valley Program. The state contact officer is a member, and usually the chairman, of this committee.

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TENNESSEE VALLEY AGRICULTURAL CORRELATING COMMITTEE

PROCEEDINGS

THIRTY-FIFTH VALLEY-STATES CONFERENCE

Meeting at
Andrew Johnson Hotel, Knoxville, Tennessee
Wednesday, April 11, 1951

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SUMMARY

Tribute to Director Schaub

A message paying high tribute to the work and achievements of Ira Obed Schaub in the field of agricultural education was received from the Honorable Frank P. Graham, former President of the University of North Carolina. Dean Schaub, a charter member of the Valley-States Conference, recently retired as Director of Agricultural Extension at North Carolina State College. President Graham's message said, in part (p. 11):

Fifty-one years ago this June, I. O. Schaub graduated from the A and M College, now the North Carolina State College of the University of North Carolina. Forty years ago he became a member of the staff in Boys and Girls Club Work. For 19 years he was Dean of the School of Agriculture and Forestry. For 26 years he was Director of the Agricultural Extension Division.

. . .

I congratulate him and all of you as he receives today the affection, high appreciation and award from his co-workers as the man of the year of the workers in the vineyards of the great valley of the Tennessee. May he long live to continue to cooperate with its waters of life in all the States in which flow the rivers from the hills and in the valleys of a more productive, a more beautiful, and a nobler South.

Agency Cooperation in the Tennessee ValleySpecial Advisory Committee (p. 63)

At its meeting on November 29, 1950, the Valley-States Conference voted to recommend termination of consideration of agency cooperation in the Tennessee Valley through the channel of the Special Advisory Committee. Accordingly, on December 4, the Correlating Committee inquired of members of the Special Advisory Committee whether it was preferable to them for the Correlating Committee to make a final report to the principals on the basis of Mr. Cant's letter and the action of the Conference, or for the Special Advisory Committee to meet before a final report was made to the principals. Replies to this inquiry received by the Correlating Committee stated that a meeting of the Special Advisory Committee was thought to be unnecessary and that the Correlating Committee should submit a final report to the principals, subject to certain suggestions that were contained in these replies.

Final Report to Principals

Accordingly, the Correlating Committee has been working on a final draft of a report to the principals but is not prepared to submit such report at this time.

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Committee on Method and Procedure for Farm
Classification and Analysis in the Tennessee Valley

In its report to the Conference, the Correlating Committee stated that copies of the report of the Committee on Method and Procedure for Farm Classification and Analysis in the Tennessee Valley, dated September 19, 1950, had been distributed to members of the Conference and that the Committee on Water and Land Use had voted to continue this committee, under the leadership of Mr. Lester E. Odom, and to add to its membership Mr. John Blackmore, Tennessee Valley Authority, and Dr. O. T. Osgood, Mississippi State College.

The present membership of the committee is as follows: Lester E. Odom, U. S. Department of Agriculture, Chairman; Samuel W. Atkins, U. S. Department of Agriculture; John Blackmore, Tennessee Valley Authority; H. J. Bonser, University of Tennessee; J. W. Moon, Tennessee Valley Authority; O. T. Osgood, Mississippi State College; and Kenneth J. Seigworth, Tennessee Valley Authority.

Standing Committees

The Correlating Committee in its report listed the present membership of standing committees, as follows:

Committee on Plant Facilities and Products

<u>Name</u>	<u>Term Expires</u>
C. H. Young, Chairman	October 5, 1952
Walter S. Brown	October 5, 1951
Roland Crumpler	October 5, 1952
N. D. Peacock	October 5, 1953

Regular meeting: Second Monday in November

Committee on Rural Facilities, Services, and Industry

<u>Name</u>	<u>Term Expires</u>
R. E. McArdle, Chairman	October 5, 1952
J. W. Moon	October 5, 1951
D. S. Weaver	October 5, 1953
H. N. Young	October 5, 1952

Regular meeting: Second Wednesday in January

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Committee on Water and Land Use

<u>Name</u>	<u>Term Expires</u>
Frank S. Chance, Chairman	October 5, 1952
Willis M. Baker	October 5, 1951
P. O. Davis	October 5, 1952
T. L. Gaston	October 5, 1953

Regular meeting: Second Wednesday in December

Statement Relating to Defense Production

The following statement, transmitted to the Correlating Committee by the Committee on Water and Land Use, was adopted by the Correlating Committee at its meeting in Lexington, Kentucky, on February 16.

The present strength of our country is due in a very large measure to the use it has made of abundant natural resources. Our continued strength and future security depend upon how successful we become in restoring, developing, and maintaining the productive capacities of our lands and waters. The international crisis which we now face threatens to be of long duration, and the present heavy drain upon our available resources may become much more severe. It is imperative that our efforts toward sustained productivity keep pace with those to increase current production for national defense.

In this national emergency new agencies have been, or will be, established, with primary responsibility for stimulating increased defense production. The agencies comprising the Valley-States Conference will be called on for assistance in this direction. In meeting such requests we should not forget that our primary and major responsibilities are for resource development and sustained productivity. We must redouble our efforts for production methods that safeguard continued productivity.

The Correlating Committee is urged to give this matter serious consideration and to bring it forcefully to the attention of all concerned.

A copy of this statement was transmitted to the Department of Agriculture, the Tennessee Valley Authority, and the land-grant colleges and universities of the Valley States.

The Fertilizer Situation

Statement of Committee on Water and Land Use

At its meeting on January 17, the Committee on Water and Land Use adopted the following statement submitted by Mr. T. L. Gaston:

SUMMARY

The committee thoroughly believes that TVA-produced fertilizers should be used to expedite land and water conservation in the Valley through test-demonstration farms in subwatersheds and outside such areas and through carefully developed special uses contributing to this public end. The committee also thoroughly believes the accomplishment of these purposes will, at the same time, make the maximum contribution toward producing needed food and fibre, placing idle land in production, increasing production per farm and per man and maintaining or improving the productive capacity of the land.

At its meeting in Lexington, Kentucky, on February 16, the Correlating Committee also adopted this statement and voted to transmit it, together with a statement relating to defense production, to the principals to the memorandum of understanding. In a letter dated February 21, 1951, transmitting these statements to the principals, the Correlating Committee said:

The Correlating Committee urges that the cooperating agencies and institutions keep the guiding principles set forth in these statements in mind in determining the assistance they render in response to the request of new or emergency agencies.

Outlook for Production of TVA-Produced Fertilizers

Frank S. Chance, Chairman, Committee on Water and Land Use, read to the Conference a statement by the late George S. McIntosh, entitled, "Projected Production of TVA Fertilizers and Prospective Supplies of Commercial Fertilizers which will be Available for Valley Use." This statement said, in part:

Two unusual factors are scheduled which will affect the volume of TVA's fertilizer production during the 1951 calendar year. (1) TVA will supply the Army with significant quantities of phosphorus for munitions use which will bring about a decrease in concentrated superphosphate. (2) The conversion of the ammonia plant from coke to natural gas will increase the production of ammonium nitrate fertilizer.

The production outlook for TVA fertilizers is reported as follows:

<u>Material</u>	Projected production (1951) <u>Tons</u>	Comparative past production <u>Tons</u>
Concentrated superphosphate	113,000	140,000
Ammonium nitrate fertilizer	178,000	150,000
Calcium metaphosphate	36,000	26,300
Fused tricalcium phosphate	30,000	17,750

"Supplies of commercial fertilizers for Valley use," the report states, "are dependent upon national supplies of nitrogen, phosphorus, and

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potassium materials. Unless considerable quantities of ammonia are used in munitions, nitrogen fertilizers and potassium fertilizers should be offered by commercial sources to farmers in greater quantities in 1951 than ever before. The sulfur shortage, however, is adversely affecting the volume of commercially produced superphosphate, which it appears will be in 1951 at least 10 percent short of 1950 production.

"A tremendous demand for fertilizers is expected. A railway car shortage is upon us now. This will make the movement of fertilizers from producing works to the farm difficult. Trucks will be pressed into service which will result in some areas obtaining more than actually needed while sections remote from plants will probably be in short supply.

"Manufacturers of mixed fertilizers have been able to obtain suitable supplies of superphosphate and potash and rather large quantities of nitrogen solutions and sulfate of ammonia, the principal sources of nitrogen in mixed fertilizers. So mixed fertilizers will probably be offered in greater volume than ever before. Since larger quantities of superphosphate will be used in these mixed fertilizers, only a limited quantity will be available for direct application."

The statement concludes, "The supplies of commercially produced fertilizers which will be available for Valley use in 1952 and future years are problematical. They are more or less dependent upon the following factors:

1. Production of sulfur, by-product sulfuric acid, and the tonnage of spent sulfuric acid available for use in the production of superphosphate; the use of waste sulfur compounds such as recovery of sulfur from the gypsum now wasted in the wet process method of producing triple superphosphate.
2. Whether or not greatly increased quantities of ammonia or its derivatives are required for use in munitions.
3. A satisfactory supply of railroad equipment to move materials from producers' works to fertilizer mixing plants and to consumers' stations.
4. That enough labor remains in mines and fertilizer plants to assure their optimum operation.

"Any of these factors or combinations thereof could result in a serious fertilizer shortage."

Outlook for Production of Commercial Fertilizers

Frank S. Chance, Chairman, Committee on Water and Land Use, presented to the Conference a statement on commercial fertilizer production based largely on "The Fertilizer Situation for 1950-1951," issued by the USDA in February 1951.

"For the 12 months ending June 30, 1951, the supply of nitrogen and potash for fertilizer purposes should exceed all previous records. The development of a shortage of native or crude sulfur required for the production of sulfuric acid

SUMMARY

is adversely affecting the production of superphosphates. The supply of superphosphates in 1950-51, therefore, will be less than in 1949-50."

The production outlook is summarized as follows:

<u>Material</u>	<u>Production</u>		
	<u>1950-51</u>	<u>1949-50</u>	<u>1948-49</u>
	<u>Tons</u>	<u>Tons</u>	<u>Tons</u>
Nitrogen (N)	1,250,000	1,030,000	1,005,000
Phosphates (P ₂ O ₅)	1,921,000	2,060,000	1,910,000
Potash (K ₂ O)	1,300,000	1,125,000	1,070,000

Resolution Relating to Procurement of
Elemental Phosphorus for Military Uses

The Conference adopted a motion made by Director J. H. McLeod to the effect that the chairman submit, on behalf of the Valley-States Conference, a request to the military authorities to apportion their requirements for elemental phosphorus among the various producers so as to reduce the take from the TVA output and thereby increase the supply available for production of phosphatic fertilizers for farm use.

In the discussion of the motion, it was suggested that the resolution be accompanied by supporting evidence and that both the phrasing of the resolution and the preparation of the supporting evidence be left to Messrs. W. A. Minor and J. C. McAmis. It seemed to be the consensus also that Chairman Cooper, together with Messrs. Minor and McAmis, should determine the official or officials of the Government to whom the resolution should be sent.

Distribution and Use of TVA-
Produced Fertilizers

E. C. McReynolds, Associate Director, Agricultural Extension Service, University of Tennessee, reviewed the development of fertilizer tests and demonstrations in the State of Tennessee and summarized the procedures now being followed in the distribution of TVA-produced ammonium nitrate in that State.

Farm Forestry and the National Defense

At its meeting on January 24, 1951, the Committee on Rural Facilities, Services, and Industry adopted the following proposal:

That the agencies and institutions represented in the Conference submit to the Correlating Committee suggestions of ways and means of strengthening the Conference members' participation in the development of farm forestry in the Valley area, with special reference to major measures now important and urgently needed to strengthen the national defense efforts over a critical period of long duration.

PROCEEDINGS OF THE CONFERENCE

Pursuant to this resolution, Director Willis M. Baker, Tennessee Valley Authority, presented to the Conference a statement entitled, "Timber Depletion through Premature Cutting." Director Baker stated, in part:

Current demands upon the remaining sawtimber resources of the Tennessee Valley are so heavy that large quantities of small, immature trees are being cut for lumber. Mobilization and increased production for national defense will undoubtedly intensify this problem. The situation is serious because our thrifty, fast-growing young timber is the growing stock essential for continued production in the critical years ahead.

After citing figures to show the waste resulting from this process, Director Baker concludes:

We cannot afford to continue such waste in losing this growth. The woodland owner, the sawmill operator, and the public all lose when the timber industry uses small, immature, rapidly growing trees. Agencies and institutions with responsibilities for resource development should forcefully bring these facts to the attention of all concerned--including the owners of farm woodlands.

Initiation of More Watershed Studies

A suggestion, relating to the initiation of more watershed studies in order to determine the effects of the interrelationships of optimum land and water use under various important conditions of soil and cover, was made originally at the meeting of the Committee on Land and Water Use on December 14, 1949. At the meeting of this committee on January 17, 1951, Director Baker stated that TVA, in connection with the tributary watershed work, has appointed an advisory committee and that one of the assignments of that committee is to make recommendations on a long-time and an immediate research program relating to land management in connection with water utilization and soil types. Director Baker suggested that the Committee on Water and Land Use defer further consideration of the suggestion regarding more watershed studies until the TVA Advisory Committee could complete its report. As soon as that report is ready, Mr. Baker said, it will be brought to the attention of the Committee on Water and Land Use.

Conference on Measurement of Farm Income

The Committee on Rural Facilities, Services, and Industry decided at its meeting on January 24, 1951, to drop from its agenda the question of establishing appropriate working relationships with the Technical Committee on the Measurement of County Income.

SUMMARY

Report of Task Force on Preparation of Work Plan

Pursuant to the resolution adopted at the meeting of the Conference on November 30, 1950, the following persons were appointed to serve on the Task Force for the preparation of a work plan:

E. P. Callahan	Extension Economist Division of Agricultural Economics U. S. Department of Agriculture Washington, D. C.
C. F. Clayton	Executive Secretary Tennessee Valley Agricultural Correlating Committee Knoxville, Tennessee
Frank S. Chance	Vice Director Tennessee Agricultural Experiment Station Knoxville, Tennessee
A. S. Fry	Chief, Hydraulic Data Branch Tennessee Valley Authority Knoxville, Tennessee
Charles R. Hursh	Chief, Division of Forest Influences Investigations Southeastern Forest Experiment Station Asheville, North Carolina
R. E. McKnight	Chief, Test Demonstration Branch Tennessee Valley Authority Knoxville, Tennessee
R. M. Reaves	Assistant District Agent Agricultural Extension Service Alabama Polytechnic Institute Athens, Alabama
H. N. Young	Director, Virginia Agricultural Experiment Station Blacksburg, Virginia

The following recommendations of the Task Force were submitted by Chairman Frank S. Chance and adopted by the Conference:

1. Adopt the work plan submitted by Messrs. Fry and McKnight as a basis for the definition, inventory, and rating of subwatersheds, with the understanding that this plan, together with the other suggestions and recommendations submitted, will be utilized by the Working Committee to prepare a general work plan. This work plan will become effective when approved by the Correlating Committee.

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2. Establish a committee to be known as "Working Committee on Preparation of Land-Water Relationship Program for the Tennessee Valley." This committee shall consist of three persons, one to be designated by the Tennessee Valley Authority, who shall serve as chairman; one to be designated by the U. S. Department of Agriculture; and one to be designated by the University of Tennessee, for the seven Colleges; provided that the work for which the committee is established shall constitute the principal assignment of each of its members. The short title of the committee shall be "Working Committee."
3. The Working Committee, operating under the guidance of the Correlating Committee, shall be responsible for accomplishing the formulation of a land-water relationship program for the Tennessee River Basin, to be completed by January 1, 1953. Initially, the Working Committee will break up the job by subjects or fields of work, to show both the framework and scope of the program which is to be formulated. On approval of this prospectus of the job by the Correlating Committee, the Working Committee may, with the concurrence of the administrative official concerned, appoint subcommittees for the various subjects or fields of work, such as the following:
 - A. Definition, inventory, and rating of subwatersheds in the Tennessee Basin
 - B. Farm program by subwatersheds
 - C. Forestry program by subwatersheds
 - D. Extension education by subwatersheds
 - E. Research and investigations by subwatersheds
 - F. Program for control of sedimentation by subwatersheds
 - G. Program for control or alleviation of flood damage on minor tributaries
4. The Correlating Committee will be responsible for the general correlation of the work. In performing this function, the Correlating Committee will make full use of the services of the standing committees of the Valley=States Conference.
5. The general report will be approved by the principals prior to release or publication.

Next Meeting of Conference

It was agreed to hold the next meeting of the Conference in Knoxville, Tennessee, on Wednesday, October 3, 1951.

DIRECTOR SCHAUB

OPENING OF THE CONFERENCE

Dean Thomas Cooper, Chairman of the Conference, called the meeting to order at 9:10 a.m.

(For the roll of the Conference, see appendix, p. 59; and for the program of the Conference, see appendix, p. 61.)

TRIBUTE TO DIRECTOR SCHAUB

It was ordered that the following telegram from Honorable Frank P. Graham be included in the proceedings of the Conference and that a copy be transmitted to Director Schaub.

Washington, D. C.
April 11, 1951

Fifty-one years ago this June, I. O. Schaub graduated from the A and M College, now the North Carolina State College of the University of North Carolina. Forty years ago he became a member of the staff in Boys and Girls Club Work. For 19 years he was Dean of the School of Agriculture and Forestry. For 26 years he was Director of the Agricultural Extension Division.

He has been President of the Southern Agricultural Workers; Chairman of the Southern Regional Extension Directors; Chairman of the Cotton Committee, which represented all the Southern Directors of Extension; Member and Chairman of the Committee on Extension Organization and Policy of the Land-Grant Colleges, which had a vital part in the enactment of the Bankhead-Jones Act of 1935; Chairman of the North Carolina State Soil Conservation Committee; Director of the North Carolina Rural Rehabilitation Corporation; member of the Governor's State Council for Defense; member of the Valley-States Conference; Man of the Year in agriculture by the award of the "Progressive Farmer" in 1938; and recipient of the Distinguished Service Award by the Association of Southern Agricultural Workers in 1947.

In the statistical records of Editor Frank Jeter we find made graphic in comparative figures the stirring story of the achievements of an agricultural statesman, Dr. Ira Obed Schaub.

During the 26 years of his directorship, the Extension staff including administrative workers, specialists, county agents, home demonstration agents and assistants, increased from 191 in 1924 to 619 in 1949. The Extension Publications Office sent out 202,000 copies of circulars, folders, and bulletins in 1924 and 1,800,000 in 1949.

More significant than all his honors, offices, publications, and increases in budgets and staff, are the solid facts of the large

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increases in the productive yields of cotton, tobacco, corn, and wheat from our soils, and the rapid increases in the production of beef and dairy cattle, poultry and hogs. His extension agronomists originated and promoted a "five-step-corn program" which in five years increased the yield of corn more than 50 percent. In the last seven years, approximately 700,000 acres in the State have been seeded in clover.

As the State has receded in the production of cotton, our people, through research, teaching, and extension, are advancing in diversification in the variety of crops, in poultry, animal husbandry and dairying as the basis for becoming one of the better agriculturally and industrially balanced States in the Nation.

With all these achievements as parts of his long and distinguished administration as teacher, director, and dean, one of the best things, in the way of research and extension, I. O. Schaub ever did was to marry the lovely and charming Maud Kennedy of the great agricultural State of Iowa, a graduate of Iowa State College, who helped him start 4-H Club work in North Carolina in 190 and has been helping him in everything else ever since.

Director Schaub also had as his Assistant Director, Dr. Jane Simpson McKinnon, who has, in her pioneering, able and gracious way, influenced the homes and lives of more rural women than any woman who has ever lived in North Carolina. Her work is ably being carried on by Miss Ruth Current, who was also chosen by Director Schaub to be Assistant Director of the Agricultural Extension Division. Schaub's county agents and home demonstration agents, white and colored, are recognized throughout the State as being among the most quietly but effectively useful citizens in the community and as teachers and leaders in that large rural university of the people called the Agricultural Extension Service. Dean Schaub, with other administrators and professors, helped to lay the foundation of one of the foremost colleges of agriculture in the Nation.

It was a source of fun to me, in my almost nineteen years of playing on their team, to work with them, help present their budgets, and lobby for the appropriations of one of the most wise, constructive, and best college administrators and directors of agricultural extension who has appeared on the American scene in my time, Ira Obed Schaub.

I congratulate him and all of you as he receives today the affection, high appreciation and award from his co-workers as the man of the year of the workers in the vineyards of the great valley of the Tennessee. May he long live to continue to cooperate with its waters of life in all the States in which, with recreative power, flow the rivers from the hills down through the valleys of a more productive, a more beautiful, and a nobler South.

To Dean Schaub, all hail and Godspeed from his friend,

Frank Graham

TASK FORCE

REPORT OF CORRELATING COMMITTEE

Dean Thomas Cooper, Chairman of the Correlating Committee, presented the report of that committee (appendix, 63). Proceedings relating to this report follow.

Cooper. I move adoption of the committee's report.

Davis. Second.

PROGRESS REPORT

DISCUSSION

Report of Task Force on Preparation of Work Plan

(Appendix, p. 81)

Clayton. In its report, the Correlating Committee states (p. 70) that the Task Force will report this afternoon. The Task Force met yesterday, and it was expected that the Correlating Committee would meet with the Task Force so that the report to be made by the Task Force could be cleared with the Correlating Committee before being presented here. But no member of the Correlating Committee was present when the Task Force met yesterday.

We say in the report of the Correlating Committee that the Task Force will submit a report. Perhaps the report of the Correlating Committee should be amended in that particular, because I have no means of knowing that it will be agreeable to the Correlating Committee for the Task Force to bring in a report to this Conference before that committee has had a chance to see it. I don't know what the answer is for that, but Mr. Mac (Mr. McAmis) and Dean Cooper, of the Correlating Committee, are here and can state whether it is deemed advisable to postpone submission of this until it can be acted upon by the Correlating Committee. Also, the proposed report has not been formally acted upon by any of the standing committees. Members of the standing committees sat with us, but they have not acted upon it in a formal session. That is a question, Dean (Dean Cooper), that I should like to raise because we have said here that this report will be presented; and it is on the program for this afternoon. There is a real question there, and I wanted to bring out the matter at this time.

Cooper. Is that a matter for action by this group, or is it a matter for action of the committee itself? I presume the easiest

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Cooper. thing would be to strike out the statement that we have here that they will report.

Clayton. And not have a report this afternoon?

Cooper. Unless you know it will be gotten ready.

Clayton. It is ready, but it has not been cleared with the Correlating Committee; and not a member of the Correlating Committee was present when we discussed it yesterday.

Cooper. Do you want the group to determine that by a vote, or do you want--

Clayton. I just don't want to be in a position--and I know Mr. Chance doesn't want to be in a position--of bringing in a report here over the objection of the Correlating Committee, if there is such an objection.

Cooper. Or do you want the Chairman of the Correlating Committee to give you a basis to operate on?

Clayton. I don't want to be put in the position of bringing a report to the attention of this Conference unless I am sure it has proper clearance. I don't want to be in a false position on it. It is perfectly agreeable to me, so far as I am concerned, to postpone presenting the report. I thought what we wanted to do was to get a report in here and discuss it. That was the reason for arranging this meeting yesterday so that we would be able to do that as, obviously, we couldn't get meetings of all three of these committees and also meet with the Correlating Committee separately; so the procedure we set up was to have a joint meeting with the idea of getting a report before this Conference today. But there are a lot of things that are more important, I think, than getting a report before the Conference.

Cooper. Will this report that you are referring to suffer by being held over, or will the group suffer here by having it held over?

Clayton. Of course, we will wait another six months; I assume we will.

Cooper. I take it there is very little opportunity for the Correlating Committee to meet and have a full forum, because I am leaving here at 1:35, I think it is, according to the L&N, because of a meeting I had previously promised to go to at Berea College.

Davis. There are members of the committee here. If there is no objection, why don't we go ahead and vote on it with such corrections as Mr. Clayton suggested.

Clayton. I think it is a question of whether Mac (Mr. McAmis) feels we ought to bring this into this group before the Correlating Committee has seen it.

TASK FORCE

- Davis. Why not just drop it out of your report until you get it cleared with the Correlating Committee?
- Clayton. It involves a six months' wait on what we are trying to do.
- McAmis. I don't see why it involves a six months' delay.
- Clayton. I don't know, Mac (Mr. McAmis), whether the idea is to bring it before the Conference or not. My notion was that it was to clear these committees and then be presented to this Conference. This Conference will not meet again for six months.
- McAmis. I have not objection to reading the report.
- Clayton. I should like to have the report read, but I don't want to be in a position of bringing the report in here when it hasn't had the clearance that is desired.
- McAmis. I think you can consider it on that basis.
- Clayton. That it has not been cleared?
- McAmis. That's right.
- Cooper. Do you have any objection, Mac (Mr. McAmis), to members of the Correlating Committee presenting it to the group as a whole at the present time?
- McAmis. I think we ought to be sure we have concurrence on it.
- Clayton. Well, I felt that I was rapidly getting in a false position on this, and I don't want to be placed in that position. If it is not appropriate to bring this report in, let us not have it.
- McAmis. I have no objection to reading the report.
- Cooper. Is there any objection to having the group act on the report? That is what you are referring to?
- Davis. Mr. Chairman, would you prefer then to let it wait until later today before acting on this? Would that help it any?
- Clayton. I think, Director (Director Davis), that the only question is whether it is agreeable to the Correlating Committee for this report to be brought in this afternoon, as we have it on the program. That is what we said we were going to do. I thought when I wrote that statement that the Correlating Committee would have heard the report and participated in the decisions yesterday, but they weren't present.
- Olson. Has this program today been approved by the Correlating Committee?

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- Cooper. Yes.
- Olson. We are talking about something that is irrelevant. The Correlating Committee has already approved the report as read.
- Clayton. No, the idea was that the Correlating Committee meet with the rest of us yesterday, but there wasn't a one of them that could be there. They have never seen this proposed report.
- Davis. The chairman is chairman also of the Correlating Committee. He has agreed to the adoption of the report and I have seconded it, so I am going to ask for the question.
- Cooper. My motion relates to the adoption of the report which I have presented so far as the Correlating Committee is concerned. Of course, the point is whether there is a statement in the report that is incorrect. If that is a fact, then I would wish to tell the group that that part of the report will be stricken out.
- Clayton. What we have in there is all right, provided Mr. McAmis and Dean Cooper agree to the presentation of that report here this afternoon. If not, I don't think we should present it.
- McAmis. You won't be here this afternoon, will you?
- Cooper. Not after 1:35.
- McAmis. I assume that the report may be read; I think that it might be discussed; but I think this Conference should defer recommendations on it until the Correlating Committee has had a chance to look at it.
- Cooper. One thing that can be done is to place the report before the entire group. There are only two members of the Correlating Committee, and I ask the members if you have any objection if the matter is brought up and presented to this group.
- McAmis. I do not have any objection to reading it, but not to act on it until the Correlating Committee has had a chance to see it.
- Cooper. What would you do in the event that the matter is brought up to them and they heard it and then decided as a group to act on it?
- McAmis. They can act on anything they want to act on; that is the procedure.
- Cooper. Our procedure is to do one of two things--strike out the statement the chairman made in the report to be presented; that is easy. The other is to present the report as a whole. Personally, I have no objection to either procedure. The simple thing, and to keep matters running as they ordinarily run, is to strike out the statement which I made which is incorrect up to the present moment.

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- Clayton. I don't see anything incorrect about it.
- Cooper. I thought the point that you had made was that we made a statement---
- Clayton. We made a statement that we were going to present this report, which was on the assumption that the Correlating Committee and these standing committees would meet yesterday and this report would be cleared, but I point out that it was not cleared by the Correlating Committee and therefore it raises the question whether it should be presented.
- Davis. Mr. Chairman, if that is the only point, I suggest the deletion of that reference there. If we just delete that point in question and go ahead with that which is not in question, then the Correlating Committee probably can meet sometime today and give us a no or yes on that.
- Clayton. They can't do that. One member of the Correlating Committee is not here.
- Davis. If that is the case, I move the deletion of that reference from the report which you presented, realizing that I seconded the motion for approval, but it was all right under the discussion to do that--move the deletion of that particular reference in the report.
- Will. Second.
- Gaston. Does that mean that the group will not even hear about or have read to it what came out of the group that met yesterday?
- Cooper. I think that is correct.
- McReynolds. Will that mean that this group which has been assigned some responsibility, as I understand it, in program development, is going to be slowed down six months?
- Cooper. I think, if my memory is right, it not only will be slowed down, but it will not operate.
- Cummings. Mr. Chairman, I think you could very easily delete the section of that that implies the Correlating Committee has approved it. I think there is considerable merit in going ahead and presenting it as it is for discussion.
- Cooper. It seems to me that whatever the statement is in here, the statement is incorrect and though it is incorrect, then certainly the party to the making of the statement can cut it out without any action.

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Mr. Clayton read the paragraph in question: "On the basis of preliminary discussions at this meeting, a preliminary work plan has been prepared and will be presented to the Conference by the Chairman of the Task Force at the afternoon session."

Clayton. We met yesterday and we drew up a report to present, and that is what this says. What we did not succeed in doing, as we had hoped to do, was having the Correlating Committee present so that we knew that this was acceptable to the Correlating Committee. Neither the Correlating Committee nor any of its members has seen this report. Therefore, I raise the question: Is it agreeable to the Correlating Committee to bring it in when they haven't even seen it?

Cummings. Cap(Mr. Clayton), I wonder if it is necessary to have clearance with the Correlating Committee for any of us to bring any matter to the attention of the Conference here.

Clayton. In this specific instance, that was the procedure agreed to, Dr. Cummings.

Cummings. I wonder if you could just add to that statement that that report has been prepared but it has not cleared with the Correlating Committee and that it will be brought to the Conference with that understanding.

Cooper. So far as I am personally concerned, I would not have the slightest objection to the presentation of the report to this group. The group is the one to take final action anyway, and personally I haven't any objection to any action they may take. That is a very broad point of view, Mac (Mr. McAmis).

McAmis. I don't have any objection to that.

Cooper. It doesn't seem that we have too difficult a question. Here we have brought together this entire group which passes upon these matters as they are presented and to reach their conclusion. I would simply take my little stub pencil and I would cross out any sentence which implies that the report is to be brought in only under such and such conditions. Gentlemen, is that satisfactory to all of you, or to a major portion of you? What it means is that the chair will ask the committee to make any statement or report that it wishes to make on this.

Davis. Dr. Cummings raised a question that is good, but I understood from Mr. Clayton that there has been a previous commitment on this. He is trying to live within that. I guess that is what the point is.

Cooper. He is trying to live within the statement the chairman made that he has read; that is what he is trying to call attention to.

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- Clayton. The arrangement made, Dean (Dean Cooper), was that this statement that the Task Force would get up would be cleared with the standing committees and the Correlating Committee before it was presented to this Conference. We intended to do that, but as it happened, neither Mr. Mac (Mr. McAmis), nor Dean Cooper, nor Mr. Dykes could be present at the meeting yesterday, so the result is that although there were a dozen or more of us there--we got together pretty well on the statement here--the result was that we are in here with it but it hasn't been cleared with the Correlating Committee. That sort of puts me in a jam. I don't wish to be in the position of dragging this report in here when we agreed to clear with these committees and the Correlating Committee, and I have not done so. I just want to be set right on it.
- Davis. Why don't you just change the language there?
- Clayton. If it is all right with Dean Cooper and Mr. McAmis to present this, that's fine; otherwise let's not present it.
- Cooper. Mac (Mr. McAmis), do you want to ask for a recess and talk to me or let me talk about it for a minute?
- McAmis. No; let's go ahead.
- Davis. Why don't we just suspend discussion of this and go on to the next matter?
- Cooper. Well, P. O. (Director Davis), maybe you have a good idea--to leave it alone for a little bit. The question is on the adoption of the report. That doesn't mean that it can't come up later, but it does give us a way to get out of this barbed wire fence.
- Davis. Mr. Chairman, if you let it stay the way it is until, say, right before noon or sometime, and bring it up for final action and go on with the other part, maybe you will have some time to think about it and chance that language to where it will be correct.
- Cooper. You see, you have all the rest of the report left hanging and if we can get rid of it in some satisfactory kind of way and off our hands, we won't have to bother with it any more.

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THE FERTILIZER SITUATION

DISCUSSION

Outlook for Production of TVA Fertilizers

(Appendix, p. 71)

- Chance. I have two reports to read. The first is "Outlook for Production of TVA Fertilizers." I might add that most of you have already received that long bunch of forms to be filled out as to the use of fertilizers in your State and the amount that it is anticipated will be required.
- Cooper. May I ask you a question, Frank (Director Chance)? It is the use of your terminology in reference to the fertilizer situation. Are you referring, as you use the term "Valley counties," to the Valley counties as we ordinarily set them up, or are you referring to the States involved as a whole?
- Chance. I think that I would have to ask Mr. McAmis or Mr. Clayton to clarify that question. Personally, I am thinking of the Valley counties as we set them up.
- Clayton. Was that in McIntosh's statement?
- Chance. Yes, and I am not just sure what he had in mind.
- Moon. I think it is the official Valley counties, 125 counties.
- Cooper. It is not applying to our state agriculture.
- Moon. I am pretty sure that that is referring to Valley counties as we use them in test demonstration and agricultural work.
- Olson. Does that mean all of the Valley counties now, or just portions of those border counties that drain into the Tennessee River watershed? Is it all of those counties? You have got quite a few border counties. Are you talking about all of the area of those border counties or just the Valley part of them?
- McAmis. All of them.
- Chance. There is another statement here on "Outlook for Production of Commercial Fertilizers." I will read that now.
- Olson. Will you repeat how you had that first report headed?

FERTILIZER SITUATION

Chance.

"Outlook for Production of TVA Fertilizers." I think Mr. McIntosh had made a very thorough study of this subject and came out with what looked to me like, taking history into consideration, a very fine statement. There are some things in there though that I think all of us have a certain interest in, and that is that we have tested calcium metaphosphate and we have tested fused tricalcium phosphate; and plants seem to be able to get better results from them, particularly from fused tricalcium phosphate than analysis indicates possible. Therefore, it may be important for us to have discussions with our State fertilizer officials to get these fertilizers analyzed by chemical procedures that are better correlated with actual plant response as shown by our plot-testing work than are the standard A.O.A.C. procedures now being generally used.

Cooper.

Just as a matter of interest, was it Kentucky that brought up the question with reference to this?

Chance.

I don't recall. Mr. McIntosh made this report and he did not designate States.

McKnight.

That was not Kentucky. Kentucky, Tennessee, and Virginia are now crushing this material to pass through an 80-mesh screen. If it was any other States, I don't know which States it was; it wasn't one of those three.

Minor.

I wonder if I might comment on one or two points. One has to do with this elemental phosphorus. I am sure that none of us feel that the military should be deprived of any phosphorus they need, but the facts, as I understand them, are these, that they are taking most, if not all, of the elemental phosphorus from the Tennessee Valley Authority production and that there are, at least, three other companies that produce elemental phosphorus which goes into soft drinks and various industrial uses that they are not drawing on. It seems to me that we ought to be able to prevail upon the military to apportion their elemental phosphorus in order to avoid the impact on fertilizers. The second point is that, with respect to nitrogen, the Army has a very large ammonium plant at Morgantown, West Virginia, which is in standby status. We are short of nitrogen fertilizer in the amount that we need and should have, and before they take any substantial amount from present producers, either the Tennessee Valley Authority or private, they should activate the Morgantown plant, even though it costs some more money. They can buy it cheaper than they can produce it there. I would say in that connection that the Department of Agriculture, several months ago, told the military that we will buy the entire output at Morgantown that they don't need. Of course, we would put it into trade channels; we have no use for it otherwise. I think we need to press the Army to activate Morgantown to supply their nitrogen instead of taking it away from fertilizer.

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- McAmis. In what way could this group do anything about that?
- Minor. It probably will take considerable activity to do it, Mac (Mr. McAmis), on the part of all of us. You folks have a letter and are working on the reply, so I think it is in the mill; so we are now working together on it to try to figure out a way to accomplish this. It might be that if this group asked consideration of those two points, it might help, particularly the phosphorus one. I don't think most people realize that that is the situation, that you are, in effect, being imposed on.
- McAmis. Of course, we have to furnish the Army whatever they want. We are trying to get the military requirements apportioned with these other producers.
- Minor. One is Victor, one is Westvaco, and what is the other one?
- McAmis. Monsanto.
- Minor. I understand they aren't supplying any.
- McAmis. We know they aren't. It is our understanding, from what you said, that they are not putting it into agricultural use. It seems that you might take some action on it if you wish, with particular reference to phosphorus.
- Minor. The nitrogen is much harder to lick. On the phosphorus one, the Army can take the action if they desire to do so. On the nitrogen, it does involve four or five million dollars to get the plant activated, which we told them we would have to get, but we haven't got them in the notion far enough yet. We get one letter saying they are doing it, and the next one says there are 17 reasons why they can't.
- McKnight. Mac (Mr. McAmis), doesn't the question of differential in cost between TVA phosphate and what they can get in industries enter into it? The industries would bid sufficiently high to make a profit; so it would cost the Army more to take phosphorus from each one of the other three plants.
- Minor. I still think they should do it.
- McAmis. We are trying to get them to do it.
- Minor. We want to join with you in doing everything we can.
- McAmis. I was wondering if you thought any action by this group would help that situation.
- Minor. Well, I don't think it could possibly hurt, and I think it might help.

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Outlook for Production of Commercial Fertilizers

(Appendix, p. 73)

- Chance. Mr. Chairman, may I go ahead and read the "Outlook for Production of Commercial Fertilizers"?
- McAmis. Chance, on that point, may I say this? Maybe the situation has changed a good deal; and there are a lot of estimates in that situation so far as George McIntosh was concerned. I think it will be all right to read it, but I don't think we possibly could consider it as an official statement from the TVA. I would rather see Mr. Crumpler or Mr. Minor take up the question of national fertilizer supplies.
- Moon. It is about eight or ten months old, you understand.
- McAmis. That was only to get some information before your committee. The TVA fertilizer statement is an official statement.
- Clayton. Mr. Mac (Mr. McAmis), this commercial fertilizer statement is a PMA release. The TVA had nothing to do with it, so far as I know. The figures are from the fertilizer report, as released by the PMA; at any rate, that is the source of it.
- Cooper. Mr. Chance, will you proceed with your statement.
- Chance. I read this on the basis that the report is rather old, and it is entirely possible that conditions have changed this outlook considerably since it was first presented.

Mr. Chance then read the statement (appendix, p. 73).

- Cooper. Thank you, Mr. Chance. The matter is before the group for discussion. Are there any comments?
- Minor. I would like to say, Mr. Chairman, in response to Mr. McAmis' statement, that these figures are, in our view, the best that are available at the present time. They represent, respectively, an increase of about 21 percent of nitrogen over the past year, a decrease of about 7 percent of phosphate, P_2O_5 , and an increase of about 15 percent in K_2O , but they are the best figures that are available and it looks like they are going to be fairly close to the final results.
- Cooper. Any other comments or suggestions? Thank you, Mr. Chance.
- McLeod. Let's go back to Mr. Minor's question that he brought up about activating the Morgantown Ordnance Works.

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- McLeod. I move that we ask the military service to activate the plant at Morgantown in keeping with the proposal made by the Department of Agriculture. Mr. Minor, I believe that was that you take any extra phosphate that they didn't use and put it into fertilizer.
- Minor. I brought two entirely different problems involving the Army. The Morgantown proposal involves nitrogen entirely.
- McLeod. You propose the nitrogen--
- Minor. The phosphate one was purely and simply a question of whether they get their elemental phosphorus from TVA or whether they divide it among the producers of elemental phosphorus. As it stands now, they are taking the TVA output, which means that fertilizer is taking a reduction and soft drinks and other uses are going right ahead.
- McLeod. You made two propositions: on phosphate and on nitrogen, is that right?
- Minor. I made one--well, I just suggested on phosphate how we feel. We are working with TVA to try to find a way to do something about it. They ought to take some of their phosphorus requirements from these other chemical concerns so that the reduction is spread to the various uses instead of all coming out of the farmer's fertilizer. That is one. The other is on nitrogen; and I think this group can probably be more effective on the phosphate one than on the nitrogen one, so far as that is concerned, but we think the Morgantown plant should be activated immediately to produce nitrogen because we are liable to have demands next year for more nitrogen than we are going to have. As a matter of fact, we stated and we told them that, if necessary, we would stockpile it; so that we are going to have shortages. We have one little plant coming into production now and not another one under construction as of today. We have got a number of others planned that will be under construction soon, which means that the Morgantown plant, in addition to Mississippi Chemical, is the only place we have got to increase production, really, for a period of two years.
- McLeod. You think we should leave the Morgantown plant out so far as nitrogen is concerned with this body here?
- Davis. Let me ask you a question. Has the USDA recommended activating both of these?
- Minor. There is just one plant involved, and the proposal is that it be activated. The first one is purely a question of Army procurement. I understand they are just requisitioning from TVA, which they have a perfect right to do, which means that

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- Minor. it is all coming out of agriculture. A lot of it is coming out of your folks here in the Valley where it shouldn't, in my opinion. I think that if you care to, you can say that the Army should apportion their take among the various producers of elemental phosphorus so as to prorate the impact on a fair basis. I think that is one step you can take. It doesn't involve any production; it is just simply whom the Army buys from.
- McLeod. Suppose we asked the Armed Forces, the military, to apportion the elemental phosphorus which they use among the various producers according to the proposal made by the Department of Agriculture.
- Minor. I wouldn't say "according to the proposal made by the Department of Agriculture," because we have not gone to the military specifically on that. We are going with TVA on that, not separately.
- McLeod. We will leave it this way then that we ask the military to apportion their requirements for elemental phosphorus among the various producers so as to reduce the take from the TVA output, and thereby increase the supply of phosphatic fertilizer for farm use.
- Cooper. That is, to apportion their needs, apportion the War Department needs among the various producers of phosphorus.
- Davis. Mr. Chairman, I think that could go in a letter from you, and it ought to state our reasons for making this request, namely, to take it out of uses that are less essential than fertilizer use. It ought to be apportioned around. I second the motion on that basis.
- McLeod. With an accompanying statement?
- Davis. Yes; supporting evidence.
- Gaston. I'd like to suggest the addition of one thing, P. O. (Director Davis), that Art (Mr. Minor) or somebody prepare the statement to go along with it. After all, that can be really good. The whole group can't do it, but one or two can.
- Davis. That is what I was thinking, that Art (Mr. Minor) might want to work with the chairman or somebody to make--
- Minor. I think that McAmis could certainly--
- McAmis. A good idea, in view of the shortage. We will work with Art (Mr. Minor) on that.

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- Cooper. I understand that there is included in the last phrase not only what was involved in the motion, but also that the supporting evidence be presented. Is that correct?
- Davis. That is correct, both of you representing this body.
- Cooper. Where is the supporting evidence that I am going to get?
- Davis. From Art (Mr. Minor) and McAmis.
- Cummings. Mr. Chairman, I am not sure that I understand fully what effect a reapportionment of the Army requisition has on the uses to which phosphate will be put. I think it is the sense of the group, if I get the discussion correctly, that we should like to see the procurement of the Army be worked out in such a way that it will not disproportionately penalize agriculture's share of the phosphate supply. I wonder if that isn't just about as far as we want to go and not make it specific to any source.
- Minor. I don't know how you could accomplish what you have just said without the other, too.
- Cummings. That may be the way it is done. You have one government agency here which is producing elemental phosphorus. You have a lot of commercial companies that are producing phosphatic fertilizers and which draw on other sources of elemental phosphorus. I don't know enough about the trade channels, the direction in which phosphorus from these various sources go, to know where the Army could purchase it with the least dislocation to the supply that goes to agriculture.
- Minor. I can answer that because the production of these other three outfits is not going to agriculture, and the TVA production was going to agriculture and would.
- Cummings. It is a pretty simple situation, I think. If a free choice is given to a manufacturing concern, they will sell their product where they can get the best price for it. If we take a little of this from TVA and if more of this from TVA goes into fertilizer and those higher-priced uses of phosphorus are pinched, they are going to be scouting around the market to get some other source. I don't know whether a shift in the proportion taken by the Army from TVA is going to help agriculture or not.
- Minor. I do, because of this. You have got four producers that are producing elemental phosphorus: Victor Chemical, Monsanto, Westvaco, and TVA. Substantially all of TVA production, Mac (Mr. McAmis), I guess goes to agriculture; maybe all of it, I don't know, except what the Army takes; most of it, at least.

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- Minor. Whereas, if I understand these others, it all goes to other purposes. The Army is taking all it is getting, I understand, from TVA. If they take part of it from Victor and part from Monsanto, and part from Westvaco, they are definitely taking it away from something other than agriculture. There isn't any way you can avoid that.
- Cummings. I understand there are concentrated superphosphates produced in several other places. Is there any phosphoric acid used in the production of these fertilizers?
- Minor. Not pure phosphoric acid. It is elemental phosphorus we are talking about here. I don't know the exact uses, but I know a good deal of it goes into soft drinks. The question is will we want soft drinks or will we want fertilizer.
- Cooper. The question, in my mind, is whether this group are going to make a request or suggestion on the Army. It seems to me we have a fundamental difficulty that arises, as I understand, under the law, or under the act creating the Tennessee Valley Authority and the carrying out of their operations. The Government actually has the first call upon the product of production, so far as it wishes to have it. I take it, then, that means the Army follows through on this law, and they are legally authorized to take the entire production.
- McAmis. We are compelled to deliver, but they are not compelled to take.
- Cooper. It is a matter of action on their part. They get a special price, and they have the right, I presume, without anything to deter them from that, to take as much as they wish.
- Minor. That's right; and they also have the right, under the terms of sale of a number of the ammonium plants, to take ammonium from those plants. What they tell me is that we can get it cheaper there than we can get it from somewhere else; we are out for the cheapest we can get. My understanding of it a day before yesterday was, whether it was to the best interest to the country or not, why that was it. I haven't discussed the phosphate with them, but I have the other, at length. They have got a point. There isn't any question but they're within their legal rights in doing what they are doing. I didn't bring it up with the idea that you would take action or wouldn't. That is entirely your choice, but I did think, in view of the comment on effect of fertilizer production on TVA, that that point ought to be brought out. The reason of the heavy impact is the Army's decision to take all of their phosphorus from that source.

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- McLeod. Mr. Chairman, in making the motion, I had this in mind that we would not take any away from the military at all, but it means by this distribution more for agriculture as a whole; thereby, from what Minor says, it will mean more for the national welfare.
- Cummings. Now let's suppose that the soft drink people and others that are needing the pure phosphorus compound, either phosphorus or derivatives from that, were cut off from that supply. Is it reasonable that they will probably go to some of these cruder sources to get some of the same material and process it for use in their operations?
- Minor. I am not a good enough chemist to tell you whether they could or could not. I am not sufficiently familiar with the nature of those products to say.
- Cummings. If that were done, then the net benefit to agriculture would be zero. There would be geographical shifts, perhaps.
- Minor. I am practically sure that is right. I know some of our folks have been stressing this point.
- McLeod. You people have been studying that for sometime, have you not?
- Minor. It has been a subject of discussion, at least.
- Davis. Mr. Chairman, the motion is that we ask the Army to reduce this load on fertilizer by taking less from TVA, recognizing that they have legal authority to do that; that is, elemental phosphorus. Dr. Cummings, it wouldn't hurt to put that matter up to them and then, if they run into problems, this would merely request that the Army take only a portion of all we could make, and then TVA would have to meet that as a minimum.
- Cooper. Do you include in that the idea that we need it in agriculture?
- Davis. They are asking for a greater production in agriculture this year and fertilizer is an essential in obtaining that increase. It seems to me it would be perfectly in order if we asked the Army to do that. Phosphate for fertilizer is absolutely essential to getting the production increased this year. They say they want a total of 3.5 to 5 percent increase this year. Phosphorus is the lowest of the fertilizer elements in prospect of supply. Isn't that right, Art (Mr. Minor)?
- Minor. Yes, that is right, compared with previous years. We are getting about seven percent less, whereas we are getting an increased supply of nitrogen and potash.
- Davis. I'd like to help that weakness.

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Cooper. Is that your motion, Dean (Dean McLeod)?

McLeod. Yes, Sir.

The motion was agreed to.

Cooper. Is it the understanding then that Mr. Minor and Mr. Mac (Mr. McLeod) will get together and phrase this the way you (of course, Mr. Mac is Mr. McLeod, who made the motion), actually want it to go in; and give us information on what supporting data you may have in mind. I suppose TVA will have the supporting data, Mac (Mr. McAmis).

McAmis. As to supporting data, if you intend to picture the requirements, then I don't think we can do it.

Clayton. Are you gentlemen planning to get together to phrase this just as you want Dean Cooper to submit it?

McLeod. TVA will have a contribution.

McAmis. I think on the supply side that you (Mr. Minor) can handle it.

Minor. I think you can better say the way to accomplish the result,

Cummings. Mr. Chairman, I would say that in the phrasing of that, I am a little skeptical as to what progress you are going to be able to make in view of the legal situation.

Minor. There is no legal requirement on them. They have a legal right, but not a legal requirement.

Cummings. That is right. They have a legal right and a financial advantage, but regardless of what the prospects are in that direction, it seems to me that your case could be made on the basis of the requirements of agriculture for high production, of the need for maximum amount of phosphorus to achieve that production, and of implementing the procurement policies in such a way that they could contribute to the needed production. Whether or not you can accomplish it is another matter, but that is the basis on which you would have a case.

Minor. That's the whole case.

Cooper. Art (Mr. Minor), may I ask you a question? It seems to me this whole matter is very important from the standpoint of agriculture. Have any congressional committees taken this matter up at all for the protection of agriculture or anything of that kind?

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- Minor. I am not sure whether the House committee went into this particular point in their hearing. It was primarily directed at sulfur, and I don't believe that they referred to this particular point. They did stress the need for the additional material. That committee could be quoted on that, as a matter of fact, in very strong terms, before this thing was pointed out, but I don't believe they went into this phosphate question.
- Olson. To whom are you going to address this request?
- Cooper. Ever since they said I was tied into it to send a letter, I was wondering who in the world I was going to write to.
- Olson. Who is the man in Government we are going to deal with, Arthur (Mr. Minor)? I think it may take an executive order from the President.
- McAmis. I don't know, but I would assume you should send that to the Board of the TVA and to the Secretary of Agriculture.
- Minor. I think we might send it to the Secretary of Agriculture and ask him to take such steps as he can, and to the TVA. And I think it wouldn't be bad, unless because of your tie-in with this group it could embarrass you, to let it go to the Secretary of Defense, General Marshall, or to Wilson, or it could go to Harrison, Production Authority.
- McAmis. So far as our tie-in with this group is concerned, I would want to refer this whole business to our Board. I wouldn't be able to answer that question.
- Minor. I think that is the question, where it would go. Certainly, if you wanted to address it to the TVA Board and to the Secretary, or just to the TVA, we are going to do everything we can anyway. The fact that you have indicated that you support the request can be used as evidence to the people involved regardless of the route it takes to get there.
- Cummings. It would pretty nearly take somebody that is over both agriculture and defense to get that sort of thing accomplished.
- Minor. As to the nitrogen plant, I had this experience. At the conclusion of the Japanese war they called me out at the Pentagon. A note had come from the Japanese. The Pentagon said, "We are going to pull the switch on all of these nitrogen plants. We are getting quite a bit of fertilizer." I said, "But you can't do that; you got to keep going until we make arrangements." "No, Sir, the telegram is already written, and the instant the order to cease firing is given, they go and the switch is pulled." I said, "Well, Captain, this is Saturday noon. The Government is supposed to be closed this afternoon. At least, give me a few days to get

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- Minor. it worked out." They finally agreed to six hours. I got back to the office and wrote a request for a directive to the Director of War Mobilization, who was then John Snyder, I guess, and got it over there Saturday afternoon. On Monday they had an order to keep going, and the plant has never stopped. That is the kind of thing it takes. On the Morgantown plant, they raised the question whether they had authority to do so and so; and they have to have a directive. I said, "All right, we will be glad to get it." Then they wanted to draft the directive. That was on February 13, and we haven't got the directive, which would be a paragraph about that long, drafted yet; so you are right that this probably would have to be done by directive.
- McLeod. I don't know; you know more about this than I. It looks like the natural proceeding for this body here would be to deal with the Secretary of Agriculture.
- Minor. We certainly are not going to take any steps on this without working with TVA. On the nitrogen, we are pushing as hard as we know how.
- Olson. The reason I raised that question, Art (Mr. Minor); I believe it is going to be extremely difficult to convince the military that they should go into the open field here and buy the munitions of war at a considerably higher price than they could get them from a Government-owned plant; and the first objective is national defense.
- McLeod. I don't think national defense would include just the military.
- Olson. It could mean raising food, but from the military standpoint, it means incendiary bombs, and smoke screens, and tracer bullets.
- Minor. I'll grant you it is hard, but we have met some harder ones than that. I don't know what part of your output they are taking now, but chances are they are going to take more than they are now taking.
- Davis. Mr. Chairman, let us make a move and make it a strong case. If they turn it down, why we have lost.
- Cooper. Gentlemen, there is no motion before you on the subject which you have been discussing. Is there further discussion? Or a motion?
- Davis. Art (Mr. Minor) has another suggestion concerning nitrogen at Morgantown. Could we help you, Mr. Minor, any with a motion on that?

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Minor. I think the chances on that are less than they are on the other one. We will certainly, so far as we are concerned, be delighted to have it. I have some reservations on how much effect it would have in addition to what we are already doing, but I do think that the Army ought to activate Morgantown immediately so that production will be available; and every ton that is made will be used as fast as it becomes available. One of the reasons I feel so strongly on that is that there is additional synthetic fibre capacity that is coming into production, and it is going to get it; don't worry about that. If that means it is going to come away from agriculture, it will have to. Some of these pulp mills are turning to uses of nitric acid. That is going to come out of the total supply, too. Industrial uses are going up, and if we don't get some additional supplies, we are going to find agriculture dropping, so the need is perfectly obvious.

Davis. Mr. Chairman, if he (Mr. Minor) doesn't think it will help, I don't want to push the matter. Maybe we could pass a resolution, authorizing you as our chairman to take whatever steps you see fit in cooperation with USDA toward activating this Morgantown ordnance plant.

Minor. Certainly, it would be all right with us.

Cooper. Art (Mr. Minor), speaking frankly, doesn't that inject another figure into it that may confuse rather than help you? After all, you are representing government. When it comes right down to it, does it help when an institution, or a professor, or dean, or somebody of that kind comes along? Does it help your situation?

Davis. This was just a suggestion, Dean.

Distribution and Use of TVA-Produced Fertilizers

Cooper. Our next item on the distribution and use of TVA-produced fertilizers is to be developed by Mr. McReynolds.

McReynolds. Mr. Chairman and gentlemen, I am not a member of a task force or any committee of this kind, so I haven't anything formal to present. In fact, I didn't interpret that I had been requested to develop anything particular with reference to procedures and policies and distribution of fertilizer, other than to give a little explanation of what has been followed in Tennessee along this line. When Mr. Clayton talked to me a few minutes about this discussion, I told him that I wanted it to be with the distinct understanding that I was not in position to say anything that could definitely apply with reference to TVA's distribution of fertilizer and that anything I had to say would be purely from the standpoint of

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McReynolds. Tennessee, without intimate knowledge of what had happened in this connection in the other States.

With rather scant information as to what I was expected to discuss, I began digging around to clarify my own thinking as to what had happened in the distribution of fertilizer in Tennessee. I remembered when I got involved in some of the phases of this job of test demonstrations I was given a copy of the contract between the University of Tennessee and TVA for "Agricultural Development and Watershed Protection" and project agreements with reference to test demonstrations, and was told that was basic to what we were working on. The thing that kind of shocked me a little bit was that these instruments were kind of yellow and covered with dust. The project agreement wasn't quite so yellow because it had been rewritten and renewed at a later date. I found I needed to review those documents a little. The contract--I suppose all the States have similar contracts--sets out what is referred to as four component factors to be continually emphasized in relation to this job. I won't discuss these because perhaps you know what they are. If you don't, it might be more effective for you to read the contracts yourselves. Test-demonstration procedure was based on the proposition of application of those factors and other things that go along with this in developing complete farm plans.

In considering this matter of distribution, we are likely to forget what led up to it, that is, the plan for development of test demonstrations, recommendations for use of phosphatic and supplementary materials, and all the processes that went along with establishing and developing demonstrations and keeping of records on this. Some of the sequence of the development of these demonstrations, for instance, were the difficulty in the beginning, in many instances, of getting communities to select demonstrators that were actually willing to undertake the job. You might say the matter was looked on with suspicion. And then there was another difficult period when there was more interest in getting fertilizers than in doing an agricultural development job. And then came the stage when they saw some results, in many instances, surprising them; when they saw cattle graze down the phosphated areas and leave longer grass on each side. Some of these folks became real interested in information available guiding them to step out a lot further than had been recommended on the basis of research available; and as adjustment of research recommendations followed, larger quantities of material were used. The demonstrations were used and accepted to a very great extent by a lot of folks other than those actually included in the demonstrations themselves.

We passed through that stage when the military didn't need as much phosphates as were available and increased quantities

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McReynolds. of superphosphate material were offered to farmers involved in the demonstration program and to other farmers who were interested in carrying these procedures farther than the demonstration farmers themselves could. In this instance, first, relatively small amounts of triple superphosphate were made available for sale to cooperative associations and later large amounts, and through a developing process, in most of the Tennessee Valley counties triple superphosphate material is available through cooperatives, at least a considerable part of the time, for use in continued emphasis of these same component factors in development of better agricultural programs in the Valley.

Somewhere during the process, a considerable quantity of ammonium nitrate was made available for demonstration purposes. Later, and rather recently, larger quantities of that material have been made available to farmers in the Tennessee Valley through cooperatives for use in emphasizing, again, the same component factors and for adding to watershed protection and economical production of forage crops.

In 1950, a cooperative arrangement was developed between the TVA, the University, PMA, and the cooperatives of the State for making this ammonium nitrate material available for defined and specific purposes. Each of the groups concerned carried some responsibilities for getting the information to the farmers and helping them obtain this material. The cooperatives distribute it; the PMA determines the areas where its use is eligible and it should be made available, and issues certificates of eligibility to the farmers showing the acreages and the crops for which they can purchase this material. The material was offered at a discount for these purposes. With the eligibility certificates, the farmers secured material from the cooperatives, and it was used in this process for emphasizing the same factors.

The amount purchased last year was not as much as was allocated for such purposes. However, estimates made by some of us prior to the beginning of the season were less than that actually purchased. There was a far greater amount of ammonium nitrate used for these specific purposes than farmers would have been interested in buying and using for such purposes a few years ago.

The uses were determined by the recommendations which research in the State have made available up to this time. There is some interest in going beyond these recommendations, but to the present time they are fall seeded pastures and the development of annual or short-time pasture forage, largely small grains and clover, and crops that will be grazed or utilized principally in the fall. Plans have been made for the 1951 season for continued emphasis of the use of both phosphates

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McReynolds. and ammonium nitrate.

The cooperative arrangement this year has been extended to include the Soil Conservation Service and the Vocational Agriculture in the Valley Counties of Tennessee. The various agencies and groups interested in the State have endeavored to work out a method through cooperative stages where phosphatic materials and nitrogen materials can be made available through established distribution channels for use in emphasizing watershed protection and development of agricultural programs. So far as the method used in Tennessee is concerned, it probably differs from that followed in other States. Probably other States have developed better methods. Each State, of course, will make decisions as to procedures to be followed. We should perhaps agree without any particular difficulty that these materials should be used for emphasizing the factors in watershed protection and agricultural development; should go so far as possible for these particular purposes within the Tennessee Valley, and they should be made available to farmers on a practical, workable basis for use in the farm business.

Cooper. May I ask you a question? Are your arrangements which you have made with the Vocational Agriculture and SCS any different from the arrangements that have been made with the several agricultural colleges?

McReynolds. They are a part of the group in Tennessee for advancing the cooperative program for use of these materials; going as far as can be through the joint effort of the various agencies and groups of the State.

Cooper. Does that cover all you want to present? I thought you had some more for us.

McReynolds. No, Sir, that is all I had to present.

Davis. Mr. Chairman, I would like to say that I think what he is talking about there is exceedingly important. It is easy for the public to get to thinking that TVA is in the commercial fertilizer business, and in some instances they think that TVA is in the gift fertilizer business--grants, gifts, subsidies, and things like that, each of which, of course, isn't true. I think we in the colleges certainly ought to be helping to apply TVA assets from the river on, through science and engineering, to the development of the type of agriculture and the total economy that we need in the Tennessee Valley. I think that is what we ought to be working on.

Olson. I think more important than the policy of distribution is the policy of use. I should like to hear that discussed.

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- Clayton. In Dean Cooper's report was quoted the motion that Dr. Cummings made at the last meeting. I want to read it again: "That an appropriate committee of the Conference make a review of the products that are being produced in TVA plants, together with those purposes to which major attention in the distribution of those products within the Valley should be directed, and bring some suggestions along that line to this Conference." I want to say, Dr. Cummings, that we have presented that request to the Committee on Water and Land Use and in response to it--what was intended to be in response to it--were presented the two statements which Mr. Chance read this morning on the outlook for production of TVA fertilizers and the outlook for production of commercial fertilizers. On the distribution aspects of it, you have just listened to a statement made by Director McReynolds. If these statements were responsive to what was in your mind, you have them; if not, they were the best we could do.
- Cummings. Just a moment; the thing that Director Chance presented was the outlook on materials. The distribution and use was not a part of that report, was it?
- Clayton. That's right.
- Cummings. Mr. McReynolds said here that he was not a member of a committee or task force; so I judge no committee of the Conference has considered that.
- Clayton. Yes, the Committee on Rural Facilities, Services, and Industry considered the question, submitted a request to TVA, and the result was an arrangement with Mr. McReynolds to come in and make this statement. My question to you is whether these statements are responsive. Our aim was to be responsive to your request.
- Cummings. I was merely making the motion. This was a resolution from the Conference, not a resolution from me. Mr. Olson here just raised a question in regard to. . . .
- Olson. My point was the use of these materials, the policy with respect to the use of, particularly, ammonium nitrate, the use of which is certainly of much greater significance in my State than the distribution. Distribution is no problem at all. We are concerned with the use of it, where are we going with this plan, and what are we going to do with this 190 thousand tons of ammonium nitrate made down there by the Government. Are we in the commercial fertilizer business, or aren't we? There is diverse opinion on that. Some say we are not and others say we surely are. What we are concerned with at home is use, use of the products of this plant, nitrogen products of this plant. We are right close by it but we don't have much area in the Valley.

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Olson.

I didn't raise this question to talk to it, Dean, but it is giving a lot of us concern.

We have groups who are traditionally row crop groups. They can't see its use on anything but row crops. They won't tell you that it is not a commercial fertilizer plant down there either. They know it is, so far as they are concerned. They can buy it, pay for it, and use it just like they want to use it.

Other groups in the State are not concerned particularly by the row crops. They would like to have a little on what small acreages of row crops they grow. They are principally concerned with its use on programs such as McReynolds described here, winter grazing, winter pastures, and those kinds of uses. We want to try to get--I don't want to speak for the institution, but I think it is the general feeling of the institution, the Land-Grant College--that we would like to see this material that comes to us, all of us, all of it, in programs of this type, and leave it to industry to supply the materials for the row crops.

We have made about 600 tons of ammonium nitrate already in our own plant, owned by about 10,000 Mississippi and Alabama farmers, an 8 million dollar plant. We hope to be running full capacity by time to cut the late corn. We will have a minimum capacity of 40 thousand tons of anhydrous, after which, under the present production arrangements, that will be converted to ammonium nitrate, giving us 20 thousand tons of anhydrous for direct application and some 45 thousand tons of ammonium nitrate. Sixty percent of the stock of that plant is owned by Mississippi Delta folks. Those are the folks that want all of the ammonium nitrate from TVA to go on row crops. Our big problem is getting the material out of row crop economy, even if it has to come out of that area, although many of us feel that we could use all of TVA's allotment to that area on specified crops that Mac has mentioned there.

Any of us down there, and some of us before we went back down there, have been feeling pretty deeply about the use of the ammonium nitrate. That is still giving us concern, and we are making every effort to get our allotment from TVA used in these winter-grazing, temporary pastures, permanent pastures, and crops of a similar nature. We are making some progress. One of our coops made the statement last Tuesday--they have a 10,000-ton allotment, approximately--about 60 percent of their volume went into these crops this past winter.

In passing, we have felt, and do now, that TVA has too little to say about how the products of this plant should be used;

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Olson.

and that is no criticism of the TVA Board or any individual in it. They make it and it belongs to TVA. I don't think they can escape their responsibility of having something to say about how it is going to be used. That goes a long way with our folks. We can tell them how it can be used and argue with them, but as long as it comes to us with little or no strings tied to it, in a row-crop state like Mississippi, you are going to have one heck of a job getting it out of those uses. It is not easy.

So, Dean, to wind up my statement here, we are concerned very much about how we are going to use this ammonium nitrate. We would like to have the priorities thrown wide open; I don't know whether our folks will agree to that; whether the coops will agree to that. We would like to have a wide-open priority on every pound that comes to Mississippi and say, "Now, boys, these are the uses which will have priority. If you use the whole allotment to Mississippi for this purpose, you get all of it." I don't know whether we will ever do that or not. Mac was down there with us last Tuesday. I don't know whether some of our folks will ever agree to that, Mac. But that is what we are driving for, and I don't believe we are going to get the feeling out of the minds of our folks that TVA is in the commercial fertilizer production until these materials are used in a long-time, educational, soil-water protective program. PMA has agreed anywhere in Mississippi, our State committee, has agreed to use these materials in these programs, spot check it for us, and they become a part of the PMA unit program. Of course, they were paying nothing on it, so it would be an integral part of their unit program.

Cooper.

Mr. McReynolds or Mr. McAmis, do you have some comment to make on this talk?

McAmis.

Yes, I could. I think it was good in McReynolds to bring up a little of the past experience with all of these materials which TVA produces, and that, I think, gives a setting for what we are talking about here. As you know, at the beginning, we put all of our phosphate into the test-demonstration program for particular uses. The next step began in 1937 by putting in the AAA program what we didn't need, or couldn't get, in the test-demonstration program. We thought, on the whole, that that was very satisfactory, so far as we were concerned. Of course, that had to be discontinued at the time of the second World War when the elemental phosphorus was going into munitions and when the requirements for shipments abroad took practically all of it except what we used in test-demonstration work. Again, as McReynolds indicated, we put our ammonium nitrates out to the test-demonstration farms, without cost for a time, in an effort again to get selective use.

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McAmis.

A year ago, you remember, at the Memphis meeting, this matter was discussed and, I think, generally approved, that the TVA would offer a specified amount of its ammonium nitrate in the Tennessee Valley for special uses, on condition that the colleges, the cooperatives, the distributors, the Department of Agriculture, and the TVA could agree on those uses. Meetings were held in each of the Valley States. That applied entirely to the Tennessee Valley. I think, Ike (Mr. Olson), in our talk here, we need to keep the distinction clear between the Tennessee Valley and the outside.

The contracts with the distributors right from the beginning carried this idea of keeping the TVA fertilizers, all of them, in a different category from that of the fertilizer industry, because they were produced under different conditions and with different obligations from the fertilizer industry. In these contracts there was cross reference to the contracts with the colleges and our memorandum with the Department of Agriculture with respect to this, so that the distributors in all cases were obligated to give consideration to those contracts and memorandum already in existence between the TVA, the Colleges, and the Valley States.

There was not much, if any, attempt, a year ago, to define those uses outside of the Valley. There was an effort to define them within the Valley. An agreement was reached in all of the States with the exception of North Carolina. No program and no discounts were undertaken in that State a year ago. Now, so far as we know--and I had hoped that McReynolds would comment on this point and all the rest of you who have had some contact with it--that arrangement within the Valley last year worked out generally satisfactorily from every standpoint. There was this one problem. That discount was confined to the watershed area; and that split a lot of counties. We recognized that was going to be a problem and would make it difficult for the county agents, the cooperatives who had county units and for the PMA county committees; we asked them to try it a year and see how they could get along with it and that we would take responsibility of confining that discount to the Valley line. There is still some problem about that, but we are willing to try to straighten out those difficulties. We think the fertilizer got pretty much to the place where it was intended, and the uses were good.

The Board has a policy, which is a national one--I don't know as it ought to be considered here since this is a Valley conference and not a national conference--of giving preference to those farmers and distributors who will agree to use any amount of nitrate or phosphate which they need, provided that the Colleges in the separate States, the Department of Agriculture, and the distributors, and the TVA

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- McAmis. could agree on those uses. It seems to me we ought to confine whatever discussion we want on this point to the Valley. This is a Valley conference.
- Davis. Who all has to agree on that, Mac?
- McAmis. We would like the Colleges, the distributors, the Department of Agriculture, and the TVA.
- Davis. Another question I would like to ask, Mac (Mr. McAmis). TVA, by law, is required to do certain things relating to fertilizer, production of fertilizer, and use of fertilizer. Is it your feeling that we are, in the cooperative program we have here, doing what Congress intended we should do on it? In other words, are we using this plant? If TVA gets to be just a commercial fertilizer concern, then we, of course, have to deal with them as a commercial fertilizer concern. My thinking now is, are we using this plant and the TVA facilities to do the job that Congress spelled out in the original act.
- McAmis. We have made a lot of headway toward it in the last year. We are making much more.
- Davis. Don't we need to make a number of changes, Mac?
- McAmis. I think we are making some of them. Of course, this priority question is all contingent upon the assumption that we will make whatever changes are in the interest of the national emergency, whatever that is, at any time that takes place, so that the national situation will have to be given preference over the other.
- Olson. The use of ammonium nitrate in the Valley is such a small volume to you and to the total production of that plant. Maybe we are following those objectives; maybe we ought to do more.
- McAmis. Maybe I didn't say that we were giving preference to the Tennessee Valley to the extent needed.
- Davis. After all, this is an area job, in accordance with how Congress designed it, and we can spread out. I am interested in other areas, of course, but we are the TVA's part of it.
- McAmis. This is the Valley part of it that we are discussing now. We expect to continue this discount, the same as we did last year, for at least another year. That is as far as the policy has gone.
- Olson. As I understand it, Mac, TVA ammonium nitrate is about 8 or 10 percent under the going price. Ask anybody who uses ammonium nitrate. Now, that might be considered.

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- McAmis. If you want to cover that, Neil (Mr. Bass), will you state the situation so far as the general price of our ammonium nitrate is concerned, the point about not raising the price?
- Bass. TVA has sufficient margin at the price of \$55.30 a ton, which is the TVA price to the first-handling cooperatives, to provide a very substantial margin over our cost. TVA didn't feel justified raising its prices to follow the market. In previous years, we had tried to peg our prices within the range of market prices, and insofar as our plant is concerned, with relation to cost. The TVA plant is one of the higher cost plants, but even so we didn't feel justified in raising the price up to the five or six or seven dollars that Ike (Mr. Olson) said is the differential now between TVA ammonium nitrate and that from most other sources. A part of the reason for our wishing to have our material priced lower than the market, of course, is that farmers would be more inclined to use it for the public objectives that Mr. McAmis has been describing. We just want to be sure that the price saving is passed on to the farmers, so that they will feel justified in using ammonium nitrate for public use objective.
- Olson. I should like to raise this question. Mac (Mr. McAmis) mentioned a four-way agreement here, the Colleges, PMA, TVA, and the coops who distribute TVA's materials. In our own case, three of those groups were very outspoken in favor of these uses that we have talked about, winter grazing pasture, and so on. The only people who are not agreeable to it are the coop folks. They don't want any strings tied to it, and they are the folks who sell it. They are the important people. The three other groups can agree to anything, but if the coops don't agree to it, the folks who get it and distribute it, we are stymied. Now, how can TVA help us, Neil (Mr. Bass)?
- Bass. I think pretty effectively, Ike (Mr. Olson), because we negotiate contracts with the distributors of these materials, and it is specified in the contract that preference will be given to these special uses. . . .
- McAmis. Which are not defined in the contract.
- Bass. These uses will be defined in this process of collaboration with the cooperatives and the educational agencies, but insofar as TVA is concerned, and it will, of course, insist upon that part of the contract being carried out, namely, that the amount which can be absorbed will be used on these cover crops and for public-use objectives as they are defined among the cooperating agencies.

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- Olson. If there is any way to put teeth in that--talking about that is one thing--if there is any way for TVA to say, "Now, boys, if you don't use it this way, somebody's contract is going to be cancelled."
- Bass. That is exactly what we are saying, Ike.
- Olson. If you do that, Neil, we will get somewhere.
- Bass. Another very effective device is the process of allocation. Under the procedures we are now working out, we will tabulate the tonnages which the different distributors pledge to use for agreed-upon objectives and take that out of the pot before we allocate material for other uses. Of course, we will have to give some weight to equitable distribution, but insofar as it is possible and feasible to do so, we are going to allocate the material to the distributors who pledge to distribute it and use it for these special objectives.
- Reaves. Ike (Mr. Olson), I think that, in itself, will help a whole lot.
- Olson. I think that will be a big help.
- Clement. We aren't absolutely tied to present distributors. If a distributor who is distributing now won't go along and another distributor will, there is that possibility.
- Crumpler. May I ask a question, Mr. Bass? Do your present arrangements have any provision for the absolute passing on of this regular saving--I am not talking about the discount--to the consumer?
- Bass. Not in the present contracts, but we hope to work out assurance of this practice without having to fix, as we have done in the case of power, a ceiling retail price or allowable mark-ups. That would raise a lot of new problems. We hope the price saving is voluntarily passed on to the farmer, but I do say, frankly, that it is unfair to the Government, to the public Treasury, for TVA to market its material at six or eight dollars under the current price and then for that material to be retailed at the going market. The fact that co-operative earnings are passed on to members as patronage dividends doesn't adequately meet the situation.
- McReynolds. Before we get entirely away from Mac's (Mr. McAmis') comments over here, I would like to say that the methods and procedure we followed in Tennessee last year, and results, were highly satisfactory, at least to the point that all of the four parties concerned, with the two new parties added to it this year, were quite enthusiastic about the prospect, and all were very anxious that we continue the same agreement.

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McReynolds. This problem that Ike (Mr. Olson) pointed out here, we have been concerned with in Tennessee. The PMA, of course, did do the spot checking. I imagine we all know there are bound to be discrepancies in the amount of material that is being used. Any general discrepancies or any outstanding intentional misuses evidently were pretty scarce and far between and didn't attract any particular attention.

This other question about holding these prices in line; that was the only thing we did have any argument about last year, and it was pretty hot; it was a regular knock-down, drag-out affair for awhile until they extended it. PMA, and probably some of the rest of the folks involved, said that we didn't want to have anything to do with this thing if we can't fix it so that we know in certain counties some reason for handling the margins between the cost and retail price can be prevented. For awhile, it looked like maybe the whole thing was going to blow up on that point, but a satisfactory compromise and agreement was reached. Apparently, everybody is very well satisfied with it now. I think maybe the local cooperatives were easier to satisfy last year than some other people.

McAmis. That was a part of the proviso that not only agreements could be reached on use, but agreements could be reached on margins and other matters of distribution between the cooperating agencies.

Olson. We had no difficulty there, Mac. We all got together and agreed on that.

McAmis. I think this can be said, generally--if not, check me on this; those who have been close to this--in almost every instance, if not every one, the need for the amount of nitrate and phosphate, for the purposes agreed upon, have been greater than the supply which TVA can deliver, with the one exception in the Valley. That was not true last year in the Valley; it may not be true next year.

Olson. We understand, Mac, that we are working hand in hand with TVA and the College on what TVA wants done with this material. We think that our viewpoint is TVA's viewpoint; that you want it used this way, and we want some help to get it used that way.

McAmis. You want it used that way!

Olson. We want it used that way; certainly, we do.

Bass. I might add, Ike (Mr. Olson), that that is why the TVA's viewpoint is what it is.

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- Olson. I don't believe we can do it by ourselves; we need some help.
- McAmis. Mr. McKnight is urging me to make another little statement. A year ago there was some debate on the question of wheat, for example; that was left out of it; it wasn't eligible; and, second, on whether we would use this nitrate on small grain that was to be harvested. That was left out a year ago. There was no spring application to oats, for example, that was to be harvested, but there was fall application. I believe that in Tennessee there was agreement that both of those provisions would be waived this year. We were perfectly willing not to do it.
- McReynolds. Those crops were left out last year because they would have been at cross purposes with PMA's control program.
- McAmis. That is right.
- McKnight. That means this that in a state like Virginia they will have a lot of small grain and not many other crops.
- Cummings. Mr. Chairman, we have gone into the details of this operation and we haven't said hardly a word about the major objectives that will be accomplished by the distribution of these fertilizer materials. I think sometimes we--I, myself, have been guilty and I suspect most of us--may be guilty of not seeing the forest for the trees. I think the important thing here is the accomplishment of the major objectives. Watershed protection is one objective that has been emphasized through our conferences and implementation of educational program that would lead toward better land use and agricultural development in the Valley.
- The Tennessee Valley is not homogeneous by any means, geographically, agriculturally, or otherwise. It has one thing, at least, in common, and that is that the drainage water goes out to the Ohio River at the same point, but the agriculture certainly varies a great deal from one part of the Valley to another. I, personally, don't feel that the minutiae of distribution have permitted the use of ammonium nitrate to the most advantageous extent in accomplishing the major objectives in that portion of the Valley that is in North Carolina. Whether it has in the other States, is something the other States can answer. I just want to cite one or two examples with respect to that. One of the things that we have been shooting at pretty hard in the test-demonstration program throughout the mountain counties is getting a more adequate, close-growing cover on the steep land, pulling the row crops down off the steeper land onto the land that can handle those without serious soil loss and excessive runoff, and by getting a higher level of production throughout, on the large number of small farms that are present there.

TVA-PRODUCED FERTILIZERS

Cummings.

About five years ago we began on a State-wide basis some very intensive programs in two fields. One was on corn production, which occupies a relatively large percentage of the acreage of cultivated land and which also occupies a large percentage of the total farm land in these mountain counties. One of the key factors in increasing corn yields was the relatively large amount of nitrogen used on the corn.

I can cite statistics in several counties in the mountain sections of the State in the Tennessee Valley to show how this intensive program for increasing corn yield has resulted in achievement of these major objectives in the Valley. Take Transylvania County, which I visited a short while back when they were honoring the corn production leaders. They had over the period of the last five years, I believe, 109 farmers in there who had records of over 100 bushels of corn per acre. In that five-year period they had raised the corn yield from an average of 26 bushels up to an average of 40 bushels per acre. The corn acreage had been reduced from 7900 acres down to 5100 acres. Now, part of that reduction has been in the Valley itself, but in discussions with the county agent he said very definitely that where the farmer had a choice, there had been a marked shift of corn from the steeper land down to the land which could handle corn more effectively.

In my way of thinking, at least, the use of ammonium nitrate to raise that level of corn yield, reduce the number of acres which the farmer had to put in corn to produce his minimum requirements, and give him an opportunity to shift his land-use pattern to one which would provide for a more adequate protection to the soil, would be in line with accomplishing the major objectives of the educational program which you want and in line with the achievement of watershed protection. The uses to which this ammonium nitrate has been restricted have not permitted its use in that direction.

I recognize the fact that the ammonium nitrate plant is a defense resource and must be kept in operating condition, and preferably operating, to provide this facility for defense when needed. I am not sure that we are making the best use of the products of this plant to accomplish the objectives that we all have in mind in all parts of the Valley. Now, admittedly, there are places in which the use of ammonium nitrate for these restricted uses contributes very materially to the agricultural programs, but I don't feel that, with the present restrictions, it is making the maximum contributions to it.

PROCEEDINGS

LUNCHEON

The Conference recessed for lunch at 12:15 p.m. At the luncheon session, Mr. W. A. Minor, Assistant Secretary, U. S. Department of Agriculture, addressed the Conference. Mr. Minor's statement appears in the appendix, p. 75.

The Conference reconvened at 1:55 p.m. In the absence of Dean Cooper, Director Chance presided at the afternoon session.

Distribution and Use of TVA-Produced Fertilizers

Continued from page 45.

Chance. I believe we were just about through with the subject that we were discussing, that is, the use of these fertilizers, but if someone else has something to say on the subject, let us hear from you before we go on to the next topic.

McAmis. I am afraid there was a little point or two that I left out. We were talking about, beginning July 1, not pressing this matter. Of course, the fertilizer is going right on out, but we have got a short supply.

Chance. Are you speaking of phosphates?

McAmis. I am speaking of both of them.

Olson. Mac, that brings up the question of availability of phosphate to go along with this nitrogen for these uses that we have been talking about. What position is TVA going to be in to make allocations?

McAmis. The same situation applies, that is, giving preference to select uses, but the discount is another thing.

Olson. But we can feel pretty sure that we will get a substantial supply?

McAmis. So far as the supply goes. We ought to be able to tell more about that within a month or maybe a week.

Clayton. May I ask Mr. Minor a question? Where is it proposed to obtain the phosphate rock to meet increased demand?

Minor. I don't know what the proportions will be, but the Atomic Energy Commission is looking toward Florida and western deposits, both. I assume the decision will be made mostly by the people who want to construct plants. The Atomic Energy Commission is not building the plants. They are just giving their support to private concerns who wish to do so, but I do know of activity in both areas. I hope it will be

FARM FORESTRY AND THE NATIONAL DEFENSE

- Minor. substantial in the West, because I do not think we are using enough from there.
- Gaston. Where are the main western deposits, Art (Mr. Minor)?
- Minor. Utah, Idaho, and Wyoming, I believe. They are very extensive out there. About 60 percent of the United States deposits are out there.

FARM FORESTRY AND THE NATIONAL DEFENSE

- Chance. We had anticipated Dr. McArdle's being here, but he couldn't attend, so we have asked Director Willis Baker to take this matter up.
- Baker. Mr. Chairman, didn't Dr. McArdle send a statement?
- Clayton. It never got here.
- Baker. I was counting on that. He phoned the other day and said that he was going to prepare such a statement, and I volunteered to supplement that.

DISCUSSION

Statement of Director Willis M. Baker

Director Baker's statement appears in the appendix, p. 80.

- Chance. Thank you, Mr. Baker. I should like to make this observation here that I think your subject is one of tremendous importance in the Valley area. I believe someone this morning said that we had about 26 million acres in the Valley area, all told, and you say about 14 million acres of it is in forest.
- Baker. That's right.
- Chance. That isn't so very different from the situation which prevails throughout Tennessee. It runs about the same. There is an asset that has been terribly neglected. As we ride through the country we can see where we are still growing trees, but in a great many cases, I think of them as "weed" trees. We are cutting out our best species and not allowing for reforestation, although 50 years from now we may still have 14 million acres of forest, but what kind of forest. It seems to me there is a big responsibility that rests on the educational institutions, research and all, in this Valley in which timber does grow fairly rapidly, for us to take a real interest in our forestry maintenance and development.

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- Smith. I was talking to a fellow yesterday, and I asked him what was the price of timber. He said, "Well, it depends upon the species and where it is located." He said that the trouble is that the better species had been cut out of the more accessible locations. Increasingly, the better species are found only in the hard-to-get-to places where you had heavy cost in getting timber out. Then there is the matter of "weed" species. I was wondering what you folks think is the best way of getting this balance straightened out?
- Baker. There has been this large number of demonstrations of cuttings throughout the Valley in cooperation with the extension services, in the case of farm wood, and the state foresters in the case of the commercialized wood. At the same time, I think one of the very significant things is some of the facts of inefficiency in operation and waste. The facts need to be brought out so that the operator recognizes when he is making money and when he isn't. When he loses money, he can't afford to pay so much for the better trees; so the good landowner doesn't get the price that he should get. There are several other projects.
- McLeod. Mr. Chairman, we have had the forestry group meet with this group before. In order to tie this thing down to one of the things that Mr. Baker brought out here, the marketing of this immature timber, I wonder if it wouldn't be well to have the forestry group in with us; I mean from TVA and the States, with an object of three things. The first thing is that the forestry people threw out these problems, one of which Mr. Baker mentioned just now. The second thing would be to draw up a program; and then the third thing would be procedural development of that program.
- I know that it wouldn't be possible to do all the things, meet all the problems, probably, in connection with forestry, Mr. Baker, but it seems to me we should pull out those things that are most important, the things we can agree upon. I know it is a fine thing for Mr. Baker to throw this out, but if we don't do something about it, the situation remains as it is.
- McReynolds. I should like to hear that discussed, and if there is no discussion, I'll make it a motion. I think probably TVA and the forestry representatives of the Colleges, and the State Forestry Department. . .
- McLeod. You can put in the State Department if you want to, but I was thinking particularly about the TVA and the forestry people of the Colleges. If you want to bring in another group, it is all right with me.
- Davis. The thing I hate to see done is to bring up something and then not follow it up and do something about it. If this is a

FARM FORESTRY AND THE NATIONAL DEFENSE

- Davis. problem, we ought to do something about it. Let me ask you, Mac, wouldn't it be better for us to take it back to our respective States? It certainly is an obvious problem and is becoming of bigger importance through the years.
- Chance. Dean (Dean McLeod), it seems to me that you have a very excellent suggestion there; however, that matter will be taken up in this next report, whereby the group of people will be outlining that kind of thing.
- McLeod. You mean, on the agenda this afternoon?
- Chance. Yes; other things in the Valley along with it. Then we will accomplish the purpose you have in mind right there.
- McLeod. I withdraw my suggestions for the time being.
- Baker. May I add just another word? I didn't intend to imply that nothing is being done. On the contrary, though, I thought this was a very urgent, a very current, a very simple problem, really, and possibly by calling it to the attention of the group, each college would do what Director Davis suggested, review those facts in your staff and perhaps have the staff put a little more emphasis on it.
- Chance. Our forest resources are being dissipated in a subtle kind of way that doesn't come to our attention as forcibly as it should. I presume all the Land-Grant Colleges in the area are working on it. I am sure they are. Some of them that I have heard reports from are doing exceptionally good work.
- Moon. Mr. Chairman, I have been noticing quite a bit of publicity about the work that Georgia is doing along this line in connection with the banks of the State. Mr. Skinner might have something of interest along that line.
- Skinner. Of course, forestry constitutes a considerable portion of the agriculture in our State. We are interested in doing something about it most of the time. I think our program was implemented quite a good deal this past winter when one of the major banks in the State conceived the idea of trying to get all of the other banks to cooperate in the matter of purchasing tree-setting machines. They got up two or three fellows from their bank and a representative from the Extension Service, the Soil Conservation Service, the State Forestry Department, I believe, and maybe one or two representatives of the railroads, agricultural men. They just visited from bank to bank all over the State. They went all up and down the railroad lines and would go in the bank and try to sell that banker on the idea of buying a tree planter to be used in the county in setting out trees for people who were interested.

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- Skinner. There were in the neighborhood of about 225 tree planters that the bankers agreed to buy over the State. That will help a lot in getting trees planted, but the trouble is that they didn't have enough trees to plant or enough seedlings to plant all the trees they wanted to plant. The big help, I think, was in drawing more attention to the forestry problem, the matter of reforestation, and in getting more people interested and, in particular, the bankers in these various counties.
- Of course, we recognize that tree planting is only one phase of it, Mr. Baker, that forest management, fire control, and that kind of thing all go along with it. When they set out trees, they are more interested in trying to take care of them, and there is the fact that one of the big banks and all the other banks in the State have been made more conscious of the problem.
- McLeod. The Federal Reserve Bank of Atlanta has that forestry program, and Georgia is just one of the States that has done something about it.
- Davis. But you have enough seedlings down there to do that. Now, you have got to have seedlings to operate a tree-planting machine. We can't go out too much in Alabama until we can find some way to get more seedlings produced.
- Skinner. Our State Forestry Department and the Federal Government have been considerably interested in the matter of producing seedlings in our State, and they set out to produce enough this past year, but the seedlings froze out. We have a setback there, but I think they are set up now to produce all the seedlings that we can plant down there.
- Chance. Mr. Baker, would you care to elaborate any on the seedling tree production in TVA? You have a forest tree nursery, do you not?
- Baker. Yes, we have two. There isn't anything encouraging I can tell you about that in that we got quite a budget cut, as I think you know, along about December; and in order to meet that one of our measures, necessarily, was to curtail seedling production. We put our Muscle Shoals nursery in standby condition for a year and intend to carry all of our production, which will be about 50 or 60 percent of what it has been, at the Clinton nursery. We hope that situation won't continue more than a year. We also anticipate that probably with increased mobilization the manpower situation will be such that there won't be any demand for trees during this immediate period. That is just a guess.

FARM FORESTRY AND THE NATIONAL DEFENSE

- Chance. Dean McLeod, can you bring us up-to-date on Tennessee's forestry seed production?
- McLeod. No, I can't. I don't know enough about it to talk about it, Frank.
- McReynolds. It hasn't been very big.
- Davis. Mr. Chairman, I think your research people need to do a little researching on how to get more seedlings produced on the farm.
- Chance. Ask Ralph Cummings back there about doing that. What is North Carolina doing in that field, Director Weaver or Dr. Cummings?
- Weaver. We have eight extension foresters. And one of our requests of the present General Assembly is for an extension man to work with small sawmills. We have about 1200 portable sawmills in the State. We talked to the man working with them in trying to get across some of the things that have been mentioned. We have five counties that have as assistant county agents forestry specialists, in addition to the eight that the State has; and we had three other counties that wanted to add them at this time, so we have quite a corps of extension workers in forestry. I can't say as to the seedling production. I haven't any complaint on the part of the extension foresters that there were not seedlings to go out on the planting program. We have quite an active forestry division in our Department of Conservation and Development.
- Baker. I think they have increased their nursery production.
- Weaver. I would like to ask Mr. Baker a question on this. He says that the eight-inch trees, or less, constitute a large proportion of present stands.
- Baker. Constitute 24 percent of the total trees.
- Weaver. Are there enough trees in the country to take care of the lumber needed, without cutting any trees of eight inches or less? Is the supply of timber that should be harvested sufficient to take care of the present needs, or will this war effort and all of the other demands for lumber make it go into that group whether we want it to or not?
- Baker. I hope not. The 24 percent of the trees produced only 4 percent of the lumber volume.
- Davis. Mr. Chairman, my point about seedlings is this. Our people say that it is very difficult for a farmer to produce his own seedlings, and we are up against this difficult problem on

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- Davis. seedlings. We have gone as far as our public money will permit. It has to be subsidized the way we are doing it. I don't know whether that is right. That money is all in use, and I was wondering if we could find out how a farmer or a number of farmers could produce their own seedlings. That may be impracticable, but it is worth thinking about.
- Gaston. A number of them, P. O. (Director Davis), are doing it in other sections of the country.
- Davis. Are they doing it with pine?
- Gaston. I don't know. They are doing it in some parts of Michigan. I remember that much. I don't know how they are doing it. And even in North Dakota; but I don't know the process.
- Davis. We are producing in Alabama, TVA and the State Department, as I recall, about 22 million. At a thousand to the acre, that isn't much for a state. That is only 22 thousand acres a year, at most, and that would run about 300 acres per county per year, which isn't much on reforestation.
- Baker. It should be going faster. Actually, what you suggest is not economical. The way to produce them, really, is in large nurseries.
- Chance. I might say that the discussion we have had here in the last few minutes, on forestry, is one that would have been quite foreign 15 years ago in a meeting like this. Although our progress may be awfully slow, our interest has been stimulated, and although it is many years behind time, we have started some place; there is no doubt about that.

PROPOSED REGION-WIDE WORK IN THE TENNESSEE VALLEY

Continued from page 19.

- Chance. The next matter for discussion is the one we skirted around the rim of for a long while this morning as to whether we should discuss it at all or not. It becomes my obligation to make this report, and I believe that I am going to call on some of the others of the committee to read this report. I think Mr. Lee Gaston would be a good gentleman to read this report. I want to say, Lee, before you start, that the Task Force which was appointed have worked. We had one meeting, as you have been told, in February in Lexington; we worked on this thing for a whole day; and then yesterday we were in session all day with the Task Force and representatives of the standing committees of the Conference. The material that we have to present here this afternoon has been threshed out pretty thoroughly, but it is being presented for your knives now, and Mr. Gaston will read it and you can jump on it.

PROPOSED REGION-WIDE WORK IN THE TENNESSEE VALLEY

Clayton. Mr. Chairman, since you are going to present this, it seems to me that the part of the report of the Correlating Committee relating to this item was correct as read this morning. I'd like, therefore, to ask that the motion for approval of the report be brought up now in order to get the record straight. That was held over, and the statement as read was correct.

Chance. All in favor of the motion as made and seconded this morning, let it be known by saying aye.

The motion was agreed to.

Mr. Gaston read the report of the Task Force on Preparation of Work Plan (appendix, p. 81).

DISCUSSION

Gaston. Back in the fourth item, Mac (Mr. McReynolds) has asked a question about what is said about the principal assignment of each member of the working committee. Suppose I read that whole item again, Mac.

Mr. Gaston reread the following item:

2. Establish a committee to be known as "Working Committee on Preparation of Land-Water Relationship Program for the Tennessee Valley." This committee shall consist of three persons, one to be designated by the Tennessee Valley Authority, who shall serve as chairman; one to be designated by the U. S. Department of Agriculture; and one to be designated by the University of Tennessee, for the seven Colleges; provided that the work for which the committee is established shall constitute the principal assignment of each of its members. The short title of the committee shall be "Working Committee."

Gaston. I am reasonably sure, Mac, that the intent back of that wording "for which the committee is established shall constitute the principal assignment of each of its members" is: Get someone who will actually work at it and give this work first priority. If he has any extra time, O. K., but if it takes full time, spend it on this work.

Cummings. That first item, will you read that again?

Gaston. "1. Adopt the work plan submitted by Messrs. Fry and McKnight as a basis for the definition, inventory, and rating of subwatersheds, with the understanding that this plan, together with the other suggestions and recommendations submitted, will be utilized by the Working Committee to prepare a general work plan. This work plan will become effective when approved by the Correlating Committee."

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Cummings. What is the general outline of that plan?

Chance. Mr. Fry or Mr. McKnight, will you summarize that for us?

Mr. Fry summarized the work plan which he had submitted to the Task Force (appendix, p. 83).

Chance. Mr. McKnight, I wonder if you would mind bringing the group current on what is being done at the present time, started and in operation, in the Chestuee and Middle Creek area.

McKnight. The Chestuee watershed is located in east Tennessee between here and Chattanooga and contains about 86,000 acres. It is located in part of three counties, the major portion being in McMinn. Within this watershed there are smaller watersheds one of which is Middle Creek, containing about 34,000 acres. An intensive land-use program is being developed in the Middle Creek watershed. TVA and the University of Tennessee are making a definite effort to measure the results. This program is a cooperative program between the University of Tennessee, TVA, and the farmers. The university is supplying field personnel. TVA is reimbursing the university for their salaries. Two field workers are now employed under these arrangements. One is an experienced extension worker about 45 years of age. The other is an experiment station farm management man. Their work is closely coordinated. Approximately 25 farms, which is about 10 percent of the total farms in the area, have been selected for intensive farm planning and record keeping. They are known as "pace-setter" farms and are selected to represent the more important group of farms in the area. TVA phosphate and ammonium nitrate are supplied for these farms at no cost f.o.b. TVA fertilizer plants. The remaining 90 percent of the farms in the area are eligible to receive TVA phosphate, but not nitrogen, under the same payment arrangement. It is impossible for the limited personnel in the area to work individually with all farmers. Most of the farmers in the area except "pace-setter" farmers are reached through community meetings and under group activity programs. PMA has a very intensive program in six Tennessee counties one of which is McMinn. We have discussed the Chestuee project with PMA officials in Washington and Nashville to see if it would be possible to coordinate the Chestuee project with their special planning program in McMinn County and possibly in Polk and Monroe in order to eliminate duplication of federal assistance to these farmers. If such arrangements can be worked out, PMA funds would be used to assist farmers in the purchase of lime and potash, seeding of cover crops, and would exclude phosphate payments for all farmers where TVA has furnished adequate quantities. In general, I think that pretty well summarizes where we are except for one thing. A reasonably detailed socioeconomic survey has been made of the area and is now being tabulated by the university. This is being done under the supervision

PROPOSED REGION-WIDE WORK IN THE TENNESSEE VALLEY

- McKnight. of Dr. Long, of the Farm Management Department. I don't believe it is anticipated in future watershed work that many areas will be worked as intensive as Chestuee. This is primarily a research project to try to bring about the maximum adjustments in land use in the direction that we think will be beneficial to stream flow based on information now available. In order that we may have some measure of the effectiveness of the total program, measurements are being made of stream flow, ground-water level, and a number of other factors.
- Chance. Mr. Moon, you made some observations yesterday along that line; and I believe that might help too.
- Moon. In what respect?
- Chance. In respect to getting this information in such shape that we can pin it down. In other words, there was a statement in regard to its being done here, there, and every other place so as to bring the whole county in, as compared with taking a small unit in.
- Moon. Although we have started work only in one tributary watershed to date, of course we are planning to initiate work in a number of other tributary watersheds. When we are looking over the plans proposed by the Task Force, the question keeps occurring to me as to what relationship the work of these committees is going to have to the start we already have, the work we are already doing, in watersheds and otherwise. I assume that will be taken care of. Not only that, but I think we need to look back even further and see, after all, whether there is much we can do about this so far as the work in the Valley is concerned; I mean, what we are doing at Chestuee, which is simply a normal extension of a movement that we have been advancing for 15 or 16 years, that is, insofar as agriculture is concerned. Now, we are planning to make a more desperate effort than we have made in the past to get more coordination not only among the different units of TVA but among all agencies working in that area. After all, the trend has been in this direction in the Valley for a long, long time, and so far as agriculture is concerned, I think it is all going to rest on what has grown out of the test-demonstration and research work that has been in operation for a long time.
- I think I know what you have in mind, Director Chance. My own thinking is that we do need a number of watersheds in which we will do the kind of work we are beginning already in Middle Creek previously referred to here. That simply consists in the main, as I think of it, first of calibrating, Mr. Fry, the water behavior in the watershed, and particularly in the streams. We will then define and describe what the situation

PROCEEDINGS

Moon.

is from the standpoint of agriculture and forestry, economically, and so forth, as best we can; then move in with a developmental effort and improve the land use situation as much as all of us can in a coordinated effort, and then at the end of five years, or a similar period, define the situation just as carefully as we can again and determine just what has been done in the way of changing land use in the area. Then, with Mr. Fry's help, we can determine what effect the development or changes in agriculture and forestry has had on stream behavior and water behavior in general on the land as well as in the streams.

What I was talking about yesterday, Mr. Frank (Mr. Chance); I think it is fine to do this kind of job in specific watersheds all over the Valley, that is, in all significant soil-agricultural divisions of the Valley. What I do add--and this is my personal thinking--is that we need enough of this sort of work to determine something more specific, just what these inter-relationships are between land use and water behavior and stream flow. However, we can carry on the same kind of developments and improvements anywhere in the Valley and get the same effect. We need to determine just what these relationships are. My point yesterday was, let us assume that we change a row crop agriculture to a grassland-livestock agriculture, and it does not affect stream flow and water behavior and water use on the land. When this relationship has been determined, we don't have to restrict all of our work of this sort to specific watersheds. I get the impression that the plan for this committee must be pretty much tied to small watersheds.

McKnight.

Unless they are contemplating that there will be more fundamental research made on smaller agricultural watersheds.

Olson.

I'd like to ask this question. Do you propose to extend the watersheds to other areas of the Valley? Chestuee is about a year old, isn't it?

Moon.

For 1952, we are thinking now of setting up three additional tributary watersheds and about three of what we call critical areas. The critical areas probably will not conform in geographic outline to specific watersheds. They may be parts of counties or some other critical area.

McReynolds.

On these small watersheds, I haven't been able to see yet what kind of criteria you are going to use to satisfy the public looking out there at large counties. There is one county that is a critical area; there are more counties just like it that are not critical areas.

Moon.

Wherever they are, the land-grant colleges are expected to take part in selecting them in their respective states. TVA, to my way of thinking, will be very much interested in these areas, around reservoirs, and so forth, where we have flooded the best lands.

PROPOSED REGION-WIDE WORK IN THE TENNESSEE VALLEY

McReynolds. You have got them all the way up and down the Valley.

Moon. The distinction, as I think of it, between the critical area and the tributary watershed is about like this. When we get into the tributary watershed, as we have been thinking of the matter, a number of divisions in TVA will have an interest in it, and it is a coordinated, integrated effort. In selecting critical areas, we can call them at the time, we select areas critical from the standpoint of agriculture; or from the standpoint of forestry, or perhaps from the standpoint of engineering, etc. And maybe only one TVA division would take an active part in the project, insofar as TVA is concerned.

Olson. Where are we going after July 1? We don't want to wait until June 15.

Moon. I think that is a very pertinent question. I don't think that I want to make any statement on that question right now. For one thing, we are getting off the subject here, although it does have some relevance.

Olson. This watershed area is a part of the over-all program.

Moon. As I think of it, these tributary watershed and special area-projects will not only be parts of the program but they are directly in the line along which TVA has been moving for some time.

Olson. I am convinced of that. I am talking about the other part of this program. You are going to have but two of them and three critical areas in the whole Valley; what are you going to do with the rest of it?

Moon. That is for 1952. I don't want to go into a discussion of that right now.

Considerable time was then given to a discussion of the report of the Task Force.

Crumpler. Mr. Chairman, I move the adoption by the Conference of the committee's report.

Gaston. I'll second it.

Crumpler. Question.

Chance. The question has been asked for. All in favor of the motion, let it be known by saying "Aye".

The motion was agreed to.

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OTHER BUSINESS

There was no other business.

The meeting adjourned at 4:15 p.m.

APPENDIX

TENNESSEE VALLEY AGRICULTURAL CORRELATING COMMITTEE

PROCEEDINGS
THIRTY-FIFTH VALLEY-STATES CONFERENCEAndrew Johnson Hotel, Knoxville, Tennessee
Wednesday, April 11, 1951

* * * * *

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* * * * *

ROLL OF CONFERENCE^{1/}AlabamaDavis, P. O., Director, Agricultural Extension Service, Athens
Reaves, R. M., District Agent, Agricultural Extension Service, AuburnGeorgia

Skinner, L. I., Assistant Director, Extension Administration, Athens

KentuckyCooper, Thomas P., Dean, College of Agriculture and Home Economics, and
Director, Agricultural Experiment Station and Agricultural Extension
Service, Lexington^{1/} See text, p. 13.

VALLEY-STATES CONFERENCE

Mississippi

Olson, L. A., State Contact Officer, State College

North Carolina

Cummings, R. W., Associate Director, Agricultural Experiment Station, Raleigh
Weaver, D. S., Director, Agricultural Extension Service, Raleigh

Tennessee

Chance, Frank S., Vice Director, Agricultural Experiment Station, Knoxville
Ewing, John A., Assistant Director, Agricultural Experiment Station, Knoxville
McLeod, J. H., Dean, College of Agriculture, and Director, Agricultural
Extension Service and Agricultural Experiment Station, Knoxville
McReynolds, E. C., Associate Director, Agricultural Extension Service, and
Coordinator of Cooperative Programs, College of Agriculture, Knoxville
Moore, Robert W., Vice Director, Agricultural Extension Service, Knoxville

Virginia

Daughtrey, W. H., Associate Director, Agricultural Extension Service,
Blacksburg

Tennessee Valley Authority

Baker, Willis M., Director, Division of Forestry Relations, Norris
Bass, Neil, Chief Conservation Engineer, Knoxville
Blackmore, John, Chief, Analysis Branch, Division of Agricultural Relations,
Knoxville
Clement, S. L., Chief, Distributor Relations Branch, Division of Agricultural
Relations, Knoxville
Fry, A. S., Chief, Hydraulic Data Branch, Division of Water Control Planning,
Knoxville
McAmis, J. C., Office of Chief Conservation Engineer, Knoxville
McKnight, R. E., Chief, Test Demonstration Branch, Division of Agricultural
Relations, Knoxville
Moon, J. W., Director, Division of Agricultural Relations, Knoxville
Rose, B. I., Administrative Officer, Division of Agricultural Relations,
Knoxville

PROGRAM

U. S. Department of Agriculture

Crumpler, Roland, Chief, Conservation Materials and Services Division,
 Production and Marketing Administration, Washington, D. C.
 Gaston, T. L., Assistant to the Chief, Soil Conservation Service,
 Washington, D. C.
 Minor, W. A., Assistant to the Secretary, Washington, D. C.
 Smith, Dr. Glenn R., Experiment Station Administrator, Office of Experiment
 Station, Agricultural Research Administration
 Will, Ralph R., Office of the Secretary, Washington, D. C.

Correlating Committee

Cooper, Thomas P., representing Land-Grant Colleges, Lexington, Kentucky
 McAmis, J. C., representing Tennessee Valley Authority, Knoxville, Tennessee
 Clayton, C. F., Executive Secretary, Knoxville, Tennessee

PROGRAM^{2/}

Morning Session

Opening of Conference Thomas Cooper, Chairman

I. Report of Correlating Committee Thomas Cooper, Chairman

II. The fertilizer situation

A. Production

Discussion led by Committee on Water and Land Use
 Frank S. Chance, Chairman

1. Outlook for production of TVA fertilizers
2. Outlook for production of commercial fertilizers

B. Distribution and use of TVA-produced fertilizers

Discussion led by Committee on Water and Land Use;
 Frank S. Chance, Chairman, and by Committee on Rural
 Facilities, Services, and Industry; R. E. McArdle,
 Chairman

1. Present distribution arrangements
2. Policy relating to distribution and use of TVA
 fertilizers
3. Problems confronting TVA and distributors

^{2/} See text, p. 13

VALLEY-STATES CONFERENCE

PROGRAM-Continued

III. Farm forestry and the national defense

Discussion led by Committee on Rural Facilities, Services, and Industry; R. E. McArdle, Chairman

Suggestions of ways and means of strengthening the Conference members' participation in the development of farm forestry in the Valley area, with special reference to major measures now important and urgently needed to strengthen the national defense efforts over a critical period of long duration.

Luncheon

Arrangements have been made for a group luncheon, to begin at 12:15 p.m., at the Andrew Johnson Hotel. At the luncheon, Mr. W. A. Minor, Assistant to the Secretary, U. S. Department of Agriculture, will address the Conference.

Afternoon Session

IV. Proposed region-wide work in the Tennessee Valley

Report of Task Force on Preparation of Work Plan; Frank S. Chance, Chairman

V. Other business

VI. Adjournment of Conference

REPORT OF CORRELATING COMMITTEE^{3/}

by

Thomas Cooper, Chairman

PROGRESS REPORT

Agency Cooperation in the Tennessee ValleySpecial Advisory Committee

At its meeting on November 29, 1950, the Valley-States Conference voted to recommend termination of consideration of agency cooperation in the Tennessee Valley through the channel of the Special Advisory Committee. Accordingly, on December 4, the Correlating Committee inquired of members of the Special Advisory Committee whether it was preferable to them for the Correlating Committee to make a final report to the principals on the basis of Mr. Gant's letter and the action of the Conference, or for the Special Advisory Committee to meet before a final report was made to the principals. Replies to this inquiry received by the Correlating Committee stated that a meeting of the Special Advisory Committee was thought to be unnecessary and that the Correlating Committee should submit a final report to the principals, subject to certain suggestions that were contained in these replies.

Final Report to Principals

Accordingly, the Correlating Committee has been working on a final draft of a report to the principals but is not prepared to submit such report at this time.

Committee on Method and Procedure for Farm
Classification and Analysis in the Tennessee Valley

In its report to the last Conference, the Correlating Committee stated (Proc. XXXIV, 86) that a report entitled, "Suggested Outline of Methods and Procedure for Farm Classification and Analysis in the Tennessee Valley," had been distributed to the members of the Committee on Water and Land Use for their consideration. At the meeting of the Committee on Water and Land Use, on January 17, 1951, Mr. Lester E. Odom, chairman of the committee which prepared this report, formally presented it to the Committee on Water and Land Use. The Committee on Water and Land Use instructed its secretary to mail copies of the report of Chairman Odom's committee to all members of the Valley-States Conference. Accordingly, processed copies of the report, dated September 19, 1950, have been distributed to members of the Conference. The Committee on Water and Land Use also voted to continue the Committee on Method and Procedure for Farm Classification and Analysis in the Tennessee Valley, under the leadership of Mr. Odom, but to add to its present membership Mr. John Blackmore, Tennessee Valley Authority, and Dr. O. T. Osgood, Mississippi State College.

^{3/} See text, p. 13.

CORRELATING COMMITTEE

The present membership of the committee is as follows: Lester E. Odom, U. S. Department of Agriculture, Chairman; Samuel W. Atkins, U. S. Department of Agriculture; John Blackmore, Tennessee Valley Authority; H. J. Bonser, University of Tennessee; J. W. Moon, Tennessee Valley Authority; O. T. Osgood, Mississippi State College; and Kenneth J. Seigworth, Tennessee Valley Authority.

Standing Committees

The present membership of standing committees is as follows:

Committee on Plant Facilities and Products

<u>Name</u>	<u>Term Expires</u>
C. H. Young, Chairman	October 5, 1952
Walter S. Brown	October 5, 1951
Roland Crumpler	October 5, 1952
N. D. Peacock	October 5, 1953

Regular meeting: Second Monday in November

Committee on Rural Facilities, Services, and Industry

<u>Name</u>	<u>Term Expires</u>
R. E. McArdle, Chairman	October 5, 1952
J. W. Moon	October 5, 1951
D. S. Weaver	October 5, 1953
H. N. Young	October 5, 1952

Regular meeting: Second Wednesday in January

Committee on Water and Land Use

<u>Name</u>	<u>Term Expires</u>
Frank S. Chance, Chairman	October 5, 1952
Willis M. Baker	October 5, 1951
P. O. Davis	October 5, 1952
T. L. Gaston	October 5, 1953

Regular meeting: Second Wednesday in December

DEFENSE PRODUCTION

Statement Relating to Defense Production

At the meeting of the Committee on Water and Land Use on January 17, 1951, Director Willis M. Baker presented the following statement, which was adopted by the committee:

The present strength of our country is due in a very large measure to the use it has made of abundant natural resources. Our continued strength and future security depend upon how successful we become in restoring, developing, and maintaining the productive capacities of our lands and waters. The international crisis which we now face threatens to be of long duration, and the present heavy drain upon our available resources may become much more severe. It is imperative that our efforts toward sustained productivity keep pace with those to increase current production for national defense.

In this national emergency new agencies have been, or will be, established, with primary responsibility for stimulating increased defense production. The agencies comprising the Valley-States Conference will be called on for assistance in this direction. In meeting such requests we should not forget that our primary and major responsibilities are for resource development and sustained productivity. We must redouble our efforts for production methods that safeguard continued productivity.

The Correlating Committee is urged to give this matter serious consideration and to bring it forcefully to the attention of all concerned.

The Correlating Committee, meeting at Lexington, Kentucky, on February 16, adopted this statement and voted to transmit a copy to the administrative heads of the Department of Agriculture, the Tennessee Valley Authority, and the Land-Grant Colleges and Universities in the Valley States.

The Fertilizer Situation

In its report to the Valley-States Conference on November 29, 1950, the Correlating Committee said in part:

Of special interest to the Tennessee Valley region is the possible curtailment of fertilizer output by TVA plants by reason of the use of these facilities to meet national defense requirements.

The standing committees are requested:

To assemble full information as to program outlook in the field of fertilizer and munitions development and submit to the Correlating Committee appropriate recommendations in their respective subject-matter fields (Proc. XXXIV, 9).

CORRELATING COMMITTEE

Pursuant to this recommendation, the Committee on Water and Land Use, at its meeting on January 17, 1951, adopted the following statement submitted by Mr. T. L. Gaston:

The committee thoroughly believes that TVA-produced fertilizers should be used to expedite land and water conservation in the Valley through test-demonstration farms in subwatersheds and outside such areas and through carefully developed special uses contributing to this public end. The committee also thoroughly believes the accomplishment of these purposes will, at the same time, make the maximum contribution toward producing needed food and fibre, placing idle land in production, increasing production per farm and per man and maintaining or improving the productive capacity of the land.

At its meeting in Lexington, Kentucky, on February 16, the Correlating Committee also adopted this statement and voted to transmit it to the principals to the memorandum of understanding, together with the statement relating to defense production. In a letter dated February 21, 1951, transmitting these statements to the principals, the Correlating Committee said:

The Correlating Committee urges that the cooperating agencies and institutions keep the guiding principles set forth in these statements in mind in determining the assistance they render in response to the request of new or emergency agencies.

The following acknowledgments of the committee's letter of February 21 have been received:

March 2, 1951

Dean Thomas P. Cooper, Chairman
Tennessee Valley Agricultural
Correlating Committee
University of Kentucky
Lexington, Kentucky

Dear Dean Cooper:

We have noted the statement of the Committee on Water and Land Use, concurred in by the Correlating Committee, which was submitted to TVA in your letter of February 21. TVA is, of course, in agreement with the principles set forth in the statement.

Sincerely yours,

Gordon R. Clapp
Chairman of the Board

FERTILIZER SITUATION

March 12, 1951

Dean Thomas P. Cooper
Chairman, Correlating Committee
College of Agriculture
University of Kentucky
Lexington, Kentucky

Dear Dean Cooper:

This is to thank you for your letter of February 21, calling attention to the fine statement adopted by the Correlating Committee at its meeting of February 16. This touches upon a matter of great importance in these critical times and we greatly appreciate having this expression of the Committee's views.

Sincerely yours,

/s/ K. T. Hutchinson

Assistant Secretary

Later, as shown by the program for the Conference, the fertilizer situation will be discussed under two major topics: Production, led by Director Chance; Distribution and Use of TVA-Produced Fertilizers, led by Director Chance and Dr. McArdle. These discussions will be based upon data assembled under the leadership of the Committee on Water and Land Use and the Committee on Rural Facilities, Services, and Industry, pursuant to the request made by the Correlating Committee in its report to the last Conference, and the motion made by Dr. Cummings and adopted by the Conference, as follows:

That an appropriate committee of the Conference make a review of the products that are being produced in TVA plants, together with those purposes to which major attention in the distribution of those products within the Valley should be directed, and bring some suggestions along that line to this Conference.

Farm Forestry and National Defense

At its meeting on January 24, 1951, the Committee on Rural Facilities, Services, and Industry adopted the following proposal:

That the agencies and institutions represented in the Conference submit to the Correlating Committee suggestions of ways and means of strengthening the Conference members' participation in the development of farm forestry in the Valley area, with special reference to major measures now important and urgently needed to strengthen the national defense efforts over a critical period of long duration.

CORRELATING COMMITTEE

The Correlating Committee requested Dr. McArdle and Director Baker to take the leadership, in collaboration with appropriate representatives of the Land-Grant Colleges, in developing a statement pursuant to this resolution. A preliminary report of this matter will be made to you later in the program.

Initiation of More Watershed Studies

At its meeting on December 14, 1949, the Committee on Water and Land Use adopted the following motion:

That this committee recommend the initiation of more watershed studies similar in design and purpose to the subproject entitled, "Effect of Type of Vegetation and Pasture Management on Water Conservation and Utilization in the Mountain Area of North Carolina," in order to determine the facts of the interrelationships of optimum land and water use under various important conditions of soil and cover.

At its meeting on January 17, 1951, the Committee on Water and Land Use considered the following action and recommendation of the Correlating Committee in regard to this proposal:

The Correlating Committee endorses the recommendation of the Committee on Water and Land Use and suggests that the committee consider the number and location of sites appropriate for expansion of projects of this type and submit specific recommendations thereon.

Director Baker stated that TVA, in connection with the tributary watershed work, has appointed an advisory committee and that one of the assignments of that committee is to make recommendations on a long-time and an immediate research program relating to land management in connection with water utilization and soil types. Director Baker suggested that the Committee on Water and Land Use defer further consideration of the suggestion regarding more watershed studies until the TVA Advisory Committee could complete its report. As soon as that report is ready, Mr. Baker said, it will be brought to the attention of the Committee on Water and Land Use.

Conference on Measurement of Farm Income

At its meeting on May 12, 1950, the Valley-States Conference adopted the following report and recommendations of the Correlating Committee:

The Correlating Committee has asked the Committee on Rural Facilities, Services, and Industry to establish appropriate working relationships with the technical committee of the Conference on Measurement of County Income. The Correlating Committee recommends that the agencies and institutions represented in the Valley-States Conference cooperate closely with the bureaus of business research of the state universities that are participating in the study in developing the

TASK FORCE ON PREPARATION OF WORK PLAN

best possible estimates of farm income and wages and salaries in agriculture.

The Conference voted to refer the matter to the Committee on Rural Facilities, Services, and Industry, with power to act.

At the meeting of the Committee on Rural Facilities, Services, and Industry, on January 24, 1951, the secretary of the committee reported that he discussed this question on the telephone with Dr. Lewis C. Copeland, Chairman of the Technical Committee on the Measurement of County Income, and that Dr. Copeland had taken no steps to pursue the matter further. In view of the fact that the study is going forward, it was agreed by the committee that the question of establishing appropriate working relationships with the Technical Committee on the Measurement of County Income should be considered closed.

Report of Task Force on Preparation of Work Plan

At the meeting of the Conference on November 30, 1950, the Correlating Committee proposed the initiation of region-wide work to:

1. Identify and set forth the "specific" problems and objectives in land-water relationships within the Valley--by subwatersheds and minor watersheds to the degree necessary.
2. Develop suggestions and recommendations for each type of research work, educational activities and technical and other assistance needed, including the extent to which each may serve to meet the specific problems and attain objectives that fall within the Tennessee Basin development program.
3. Recommend an integrated program of research work, educational activities and technical and other assistance needed for the Tennessee Basin in line with the "specific" objectives mentioned in item 1 above.

The Conference approved this proposal and adopted the following motion, made by Dr. R. E. McArdle, as a basis for inaugurating the work:

I move that arrangements for getting this plan made for the two-year job be left to the Correlating Committee, with the suggestion that the Correlating Committee consider the desirability of accomplishing the making of a plan by engaging a small task force of technicians who will actually put the plan together; and that the Correlating Committee further make the fullest possible use of the present standing committees of the Conference to review that plan before it is presented to the Conference.

CORRELATING COMMITTEE

The following persons have agreed to serve as members of the Task Force proposed in Dr. McArdle's motion:

E. P. Callahan	Extension Economist Division of Agricultural Economics U. S. Department of Agriculture Washington, D. C.
C. F. Clayton	Executive Secretary Tennessee Valley Agricultural Cor- relating Committee Knoxville, Tennessee
Frank S. Chance	Vice Director Tennessee Agricultural Experiment Station Knoxville, Tennessee
A. S. Fry	Chief, Hydraulic Data Branch Tennessee Valley Authority Knoxville, Tennessee
Charles R. Hursh	Chief, Division of Forest Influences Investigations Southeastern Forest Experiment Station Asheville, North Carolina
R. E. McKnight	Chief, Test Demonstration Branch Tennessee Valley Authority Knoxville, Tennessee
R. M. Reaves	District Agent Agricultural Extension Service Alabama Polytechnic Institute Auburn, Alabama
H. N. Young	Director, Virginia Agricultural Experiment Station Blacksburg, Virginia

The Task Force held its first meeting in Lexington, Kentucky, on February 28. At this meeting, Director Frank Chance was elected chairman of the Task Force. On the basis of preliminary discussions at this meeting, a preliminary work plan has been prepared and will be presented to the Conference by the chairman of the Task Force at the afternoon session.

Next Meeting of Conference

The Correlating Committee recommends that the next meeting of the Conference be held in Knoxville, Tennessee, on Wednesday, October 3, 1951.

ADDITIONAL PROPOSALS AND RECOMMENDATIONS

The committee has no additional proposals or recommendations to make. This concludes the report of the Correlating Committee.

OUTLOOK FOR PRODUCTION OF TVA FERTILIZERS^{4/}

by

Frank S. Chance

Mr. Chairman, the best summary that I could give as to the outlook for production of TVA fertilizers is to read a statement which was presented to the Committee on Water and Land Use by the late George S. McIntosh. That statement, entitled "Projected Production of TVA Fertilizers and Prospective Supplies of Commercial Fertilizers Which Will be Available for Valley Use," follows:

Two unusual factors are scheduled which will affect the volume of TVA's fertilizer production during the 1951 calendar year. (1) TVA will supply the Army with significant quantities of phosphorus for munitions use which will bring about a decrease in concentrated superphosphate. (2) The conversion of the ammonia plant from coke to natural gas will increase the production of ammonium nitrate fertilizer.

The projected production of concentrated superphosphate in 1951 is 113,000 tons. During the past several years shipments of this material have approximated 140,000 tons. TVA may be called upon to supply larger quantities of phosphorus for munitions. This would effect a further decrease in 1951 superphosphate production.

The projected production of ammonium nitrate fertilizer in 1951 is 178,000 tons. In the past it has averaged about 150,000 tons. But there is also the possibility that TVA may be called upon to supply ammonia or its derivatives for munitions use, in which case ammonium nitrate fertilizer production would be decreased.

TVA plans to produce 36,000 tons of calcium metaphosphate in 1951. It produced 26,300 tons in 1950. Consideration is being given to increasing fused tricalcium phosphate production to 30,000 tons in 1951. Production was 17,750 tons in 1950.

The Army will use increased quantities of TVA's phosphorus in 1952. This should vary in accord with the international situation. If present conditions continue, production of concentrated superphosphate will be decreased to 50,000 to 60,000 tons; calcium metaphosphate will remain at 36,000 tons; and fused tricalcium phosphate will be increased to 40,000 tons. If TVA's ammonia is not needed for munitions, ammonium nitrate fertilizer production will be increased to 195,000 tons.

In case of all-out war, the Army is expected to increase its requirements of phosphorus to such an extent that TVA will be unable to produce concentrated superphosphate in 1952 and years following. Production of other TVA phosphates

^{4/} See text, p. 20.

PRODUCTION OF TVA FERTILIZERS

should not be affected, the annual production levels of calcium metaphosphate and fused tricalcium phosphate remaining at 36,000 and 40,000 tons, respectively.

Since elemental sulfur which is used extensively in the production of superphosphates is in short supply, such phosphates as calcium metaphosphate and fused tricalcium phosphate which are produced without the use of sulfur have a valuable potential as fertilizers. Due to the established analytical procedures for determining the P_2O_5 content of fertilizers, some difficulty may be incurred in supplying these materials throughout the Valley on a sales basis. While agronomic tests indicate that calcium metaphosphate and fused tricalcium phosphate are efficient sources of plant nutrient phosphorus, they do not lend themselves to the method of analysis recommended by the A.O.A.C.; the official method for determining available P_2O_5 in fertilizers and which is used by state control officials in making such determinations. The first step in analyzing phosphorus fertilizers to determine their contents of available P_2O_5 by the A.O.A.C. method is to grind the material to pass through a 20- or 35-mesh screen. To determine the availability of the P_2O_5 in calcium metaphosphate it is necessary to grind it to pass through an 80-mesh screen. In all other respects the availability of the P_2O_5 in calcium metaphosphate is determined by the same analytical method designated as official by the A.O.A.C. Should TVA grind its calcium metaphosphate to go through an 80-mesh screen the material would conform with A.O.A.C.'s analytical methods, but fertilizers of such fineness are not practical at a time when farmers are demanding granular fertilizers. Calcium metaphosphate is ground to pass a 10-mesh screen.

The fertilizer control officials of several states have agreed to grind calcium metaphosphate to an 80-mesh fineness for analytical purposes. Others have not. Recently the request was made to register calcium metaphosphate in one of the Valley States as 62 percent available P_2O_5 . The State control officials demurred countering that it could be registered as containing 58 percent available P_2O_5 , an availability that can be obtained by grinding to a 35-mesh. We are hopeful that these officials will eventually agree to grind calcium metaphosphate to go through an 80-mesh screen in making analyses.

When analyzed by the official A.O.A.C. method, fused tricalcium phosphate containing 30 percent total P_2O_5 shows only 55 percent of this P_2O_5 as available. Yet several agronomists have stated that as a plant nutrient a unit of its total P_2O_5 content is 90 percent as effective as a unit of available P_2O_5 in superphosphates. The production cost of fused tricalcium phosphate is such that it could not be manufactured and sold at a price based on only 55 percent of its total P_2O_5 content being available to plants, but it may be a profitable enterprise if sold on a basis of 90 percent of its total P_2O_5 being available. This problem must be worked out with state control officials if TVA is to supply the projected quantities of fused tricalcium phosphate.

Supplies of commercial fertilizers for Valley use are dependent upon national supplies of nitrogen, phosphorus, and potassium materials. Unless considerable quantities of ammonia are used in munitions, nitrogen fertilizers and potassium fertilizers should be offered by commercial sources to farmers in greater quantities in 1951 than ever before. The sulfur shortage, however, is adversely affecting the volume of commercially produced superphosphate, which it appears will be in 1951 at least 10 percent short of 1950 production.

FRANK S. CHANCE

A tremendous demand for fertilizers is expected. A railway car shortage is upon us now. This will make the movement of fertilizers from producing works to the farm difficult. Trucks will be pressed into service which will result in some areas obtaining more than actually needed, while sections remote from plants will probably be in short supply.

Manufacturers of mixed fertilizers have been able to obtain suitable supplies of superphosphate and potash and rather large quantities of nitrogen solutions and sulfate of ammonia, the principal sources of nitrogen in mixed fertilizers. So mixed fertilizers will probably be offered in greater volume than ever before. Since larger quantities of superphosphate will be used in these mixed fertilizers, only a limited quantity will be available for direct application.

The supplies of commercially produced fertilizers which will be available for Valley use in 1952 and future years are problematical. They are more or less dependent upon the following factors:

1. Production of sulfur, by-product sulfuric acid, and the tonnage of spent sulfuric acid available for use in the production of superphosphate; the use of waste sulfur compounds such as recovery of sulfur from the gypsum now wasted in the wet process method of producing triple superphosphate.
2. Whether or not greatly increased quantities of ammonia or its derivatives are required for use in munitions.
3. A satisfactory supply of railroad equipment to move materials from producers' works to fertilizer mixing plants and to consumer stations.
4. That enough labor remains in mines and fertilizer plants to assure their optimum operation.

Any of these factors or combinations thereof could result in a serious fertilizer shortage.

OUTLOOK FOR PRODUCTION OF COMMERCIAL FERTILIZERS^{5/}

by
Frank S. Chance

Mr. Chairman, a preliminary statement on the nitrogen, phosphate, and potash supply outlook for 1950-51 was presented to the Committee on Water and Land Use on January 17, 1951. That statement, supplemented to some extent by data taken from "The Fertilizer Situation for 1950-51", issued by the USDA in February 1951, follows:

^{5/} See text, p. 23.

PRODUCTION OF COMMERCIAL FERTILIZERS

For the 12 months ending June 30, 1951, the supply of nitrogen and potash for fertilizer purposes should exceed all previous records. The development of a shortage of native or crude sulfur required for the production of sulfuric acid is adversely affecting the production of superphosphates. The supply of superphosphates in 1950-51, therefore, will be less than in 1949-50.

Nitrogen (N)

During 1950-51 the quantity of nitrogenous fertilizer in all forms expected to be available for use by farmers is placed at approximately 1,250 thousand tons nitrogen (N) content basis, compared with approximately 1,030 thousand tons in 1949-50 and 1,005 thousand tons in 1948-49.

The 1950-51 estimate assumes that imports will be slightly higher than in 1949-50 and that commercial exports will be lower. Nonagricultural uses, which are higher than last year, are expected to remain at about current levels during the next several months.

Phosphates (P₂O₅)

Production of available phosphoric acid in normal and concentrated superphosphates and wet base goods for the fiscal year ended June 30, 1951, will total approximately 1,803 thousand tons, somewhat less than the output of the previous year.

It is assumed that production of miscellaneous forms of phosphatic fertilizers such as calcium metaphosphate and phosphoric acid used for fertilizer as such will be about the same as in 1949-50. Imports and exports of processed phosphatic fertilizer are not large in relation to total production.

Probably the most difficult current problem with respect to superphosphate production is the reduction in the supply of sulfur to produce sulfuric acid. Although limitation has been placed on the quantity of native (crude) sulfur to be exported in 1951, the supply for domestic use is expected to be approximately 20 percent less than received last spring. This cut-back, which appears to be severe, should be considered with the fact that a considerable tonnage of superphosphate is being made with by-product acid and to some extent with spent acid.

Taking these factors into consideration, it is estimated that the aggregate domestic supply of phosphatic fertilizers in all forms and from all sources--including net imports--for 1950-51 will comprise some 1,921 thousand tons P₂O₅ basis compared with about 2,060 thousand tons in 1949-50 and 1,910 thousand tons in 1948-49.

Potash (K₂O)

Based on a continuing high level of production during the remainder of 1950-51 (potash fiscal) year, it is estimated that domestic deliveries of potash, plus imports, will reach approximately 1,300 thousand tons K₂O content. This

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compares with the 1,125 thousand tons in 1949-50 and 1,070 thousand tons in 1948-49.

As about 85 percent of the United States' output of potash sales originates in the Carlsbad, New Mexico, area, distribution depends upon rail transportation and therefore is particularly sensitive to any railroad tie-up and box-car shortages.

GRASS AND PROGRESS^{6/}

by

W. A. Minor

Chairman Cooper (introducing Mr. Minor): From time to time, as we hold these Conferences, we invite in men who have performed services and have been in positions of power and of direction and who are able to bring to us viewpoints, expressions, and experiences that, at least it seems to me through the years, have meant a great deal to us. I am especially pleased that at this particular Conference we have as a speaker not only a man who is an old friend--not in years, because he is no balder than I am--whose friendship I have valued very highly and one whom I have had the privilege of working with and enjoying doing so. I know that many others of you have had the same experience, and to introduce him is unnecessary for a group of this kind and for a group of this size. I am very glad to present to you our good friend Art Minor, whom we are very glad indeed to have with us; and I hope this is the beginning of many visits that he shall have with us again.

Mr. Minor: I'm glad to have a chance to be with you today. Most of our paths have crossed many times and I feel as if I'm among old friends. Being introduced by Dean Cooper would put me in that frame of mind anyhow. I well remember the first time I met Dean Cooper. It was at the University of Georgia where I was, in my Junior year, treasurer of the local chapter of Alpha Zeta and Dean Cooper was on the High Council. I was to meet him and naturally I wanted to make a good impression.

In those days I had only one suit to my name, and a couple of ROTC uniforms--one to wear while the other was at the laundry--and those uniforms were pretty much what I wore through school.

Well, this particular day I had sent my suit to the cleaner, and expected it back in plenty of time to be wearing it when I went up to his hotel room to meet this learned gentleman. The suit didn't come back. The ROTC uniform I had was much the worse for wear. In fact, it was about due for its trip to the laundry and the other one wasn't back yet. I don't know if Dean Cooper ever heard all this before, but the fact is, in the last few hours before I was to meet him, I hurried to the cleaners to see if they had my suit, but no, it was on the truck on its way to be delivered, and the truck was out somewhere on its route with no way for me to catch it. Well, I fussed and I fumed; and maybe Dean Cooper remembers how I dressed to meet him, but I don't.

^{6/} See text, p. 46.

GRASS AND PROGRESS

I don't remember what I wore, but I remember how much he made me at home, and how quickly I felt comfortable in the presence of this impressive man.

That was twenty-eight years ago, and a lot of things have changed, but Dean Cooper is still, in my mind, an impressive man, and he still puts folks at their ease mighty soon.

One of the things that has changed a lot since that time is the pattern of farm production. There is no place where this is more true than in the South, as you know so well. As recently as when I worked in this area we didn't think there were any perennial grasses suitable for use in a rotation. A little Bermuda grass, no legumes to mention except peas and soybeans. You all know what has been happening since then. There are kudzu, the vetches, lespedezas, clovers, and a lot of other legumes that aren't new any more. Some of the meanness has been bred out of Johnson grass, and there are lots of other grasses, some of the improved Bermudas, the southern bromes, fescues, and a lot of others.

Now we aren't interested in grass for sentimental reasons. It has to be productive and stay productive, enough so to hold its own in the business of a good farmer. Actual farm records have shown that where adapted grass-and-legume mixtures are used right, cared for wisely, and fertilized as needed, they will more than hold their own. Take the matter of nutrients for livestock. On North Carolina land where they get 50 bushels of corn to the acre, they get the feed equivalent of 87 bushels of corn by using the right kind of pasture.

In my native State of Georgia, I've seen improved Bermuda grass that produced eight tons of hay per acre with 13 percent protein content. This grass had 400 pounds of nitrogen per acre along with adequate amounts of other fertilizer materials. This is a big change from the Bermuda I used to dig out of the cotton field.

Or take the man-hours. For a man-hour devoted to grass, you can get six times the yield you get from corn, and nine times the return from oats.

Or take costs of production. For a hundred pounds of actual digestible nutrients from improved pasture, costs have been less than a third the cost of the same nutrients from corn for grain, about a third of the cost of corn for silage, and about a fourth of oats for grain.

These yields reflect a new philosophy about grass and grassland. You can remember, and so can I, when land that wasn't fit for anything else was the pasture; when land in grass was about the same as land not producing anything.

That kind of grassland never got fertilizer. Probably it was overgrown with scrubby brush. The idea of better grass seed and legumes in the right combination was just never thought of.

That is, it never came up till some folks like you got busy--and while it sort of grew up everywhere, I think it is fair to say that you and your States did a lot of real pioneering in this--and by education and demonstration you proved that it worked. Well, when you can show a farmer how to make another dollar, or make the same dollar with less work, you're in business. Now the idea of

W. A. MINOR

better and more productive grasslands has spread very widely, and it has begun to take hold.

With aggressive folks like you and other leaders around the country showing the way and making these things possible, there came into being recently the national grasslands program.

We could have let the grasslands idea just spread by itself. It was spreading fast, all right. It was making money for a lot of people, and that was good. But if everybody works together you can swap information, you can steer the demand for different kinds of seeds, can bring out problems to be solved, better than if there is no coordination. The grasslands program was developed cooperatively by agencies of the Department of Agriculture and representatives of the Land-Grant Colleges acting through the Association of Land-Grant Colleges and Universities. In announcing the program, the fullest possible support and participation was invited of all who can contribute to the program objective. I am glad to say we have got the real cooperation of state colleges, experiment stations and extension services, private agricultural agencies, farm organizations, and industries. With that kind of support behind an organized program, I am expecting big things.

Maybe you'd like to know what big things I'm expecting. Well, for one, there is the increased use of a lot of land. With mobilization for defense upon us, we have got to get every acre to contribute its share to the national needs. For another thing, I expect to see a lot of land fastened down where we want it. The story of soil erosion is so well-known to you I won't repeat it. Also, we all know the vital importance of long-term productivity. Not only do we need an abundance now, but we will keep on needing it for a long time to come.

Grasslands have a real contribution to make to THAT. Finally, I expect grasses and legumes in rotations not only to be highly productive of meat and milk, of which we will be wanting more, but they will help build up the soil for row crops.

By contributing to the development of stable, profitable, balanced livestock farming, sustained abundance, good nutrition and conservation of the Nation's soil and water resources, the program will also strengthen the family farms which are the tradition and strength of the United States.

The organization of this grasslands program is in a good way to thrive, because it got off to a might good start as the cooperative product of the Department of Agriculture and the tremendously able and interested people of land-grant colleges all over the country. Not only does the program have the benefit of their wisdom and long experience in their own localities, but it also has their enthusiasm, which is so important. Every land-grant college has a part in the grasslands program. The same is true of the several department agencies which can make a contribution to this program. We have had enthusiastic participation and support from many national organizations and private businesses. All of these groups are having a part in developing, in each state and each county, a program which meets the needs of the area. With all those people wishing it to succeed, it can't fail.

GRASS AND PROGRESS

The farmers will be assisted in attaining the objectives of the program by each agency through its regular activities adapted to fit with other related efforts. Such a result can only be attained when the interested agencies have a part in developing the program, as well as in carrying it out.

It has come to my attention that a task force from your group has been working on a plan for developing an up-to-date over-all agricultural program for the Valley directed to the conservation and hydrologic needs of the watersheds and integrated into the broad development program already under way. The need for a long-range watershed program to complement the river channel development is apparent to all of us. I wouldn't presume to try to tell you how to do that job. You are a bunch of old hands at the business. But I would like to emphasize the advantages of joint planning such as I understand is contemplated. When everybody pulls together you can do more than the same amount of "horsepower" will accomplish when everybody pulls separately. We started with that premise in organizing our grasslands program and we are not being disappointed.

One of the key factors in productivity on grasslands as on any other kind of farm is fertilizer. Your work in this section led the way in use of fertilizer on grasslands, back in the days when that was rash, not to mention ridiculous, in the eyes of some people. It began with lime and phosphate. I well remember, for I had a share in making phosphate available for the first time in the TVA country under the agricultural conservation program. This was about 1937. You know the story since then; grassland gets as much care and as good fertilizer as any kind of land, when it's cared for by someone who sees the possibilities.

This trend--this using of more fertilizers, converting it into feed for livestock, and thus into human food--has gained tremendous momentum over the last few years. In 1945 I met with a committee of the fertilizer industry and talked about the use of a million one hundred thousand tons of nitrogen as fertilizer annually in the near future and corresponding amounts of phosphate and potash. They were too polite to laugh at me, but they were very strong in their criticisms of the increase I suggested. This year we are using over one million two hundred fifty thousand tons of nitrogen.

Not long ago I met with the same group. I told them, and I repeat to you, that we will need at least to double our fertilizer capacity in the next ten years. This time they didn't laugh and some were ready to go further than that.

That is a trend worth looking at; if you take the five-year average, 1935-39 inclusive, as an index of 100, our present plant food consumption 1950-51--is at the level of 305. That's more than three times as much fertilizer. The relative amounts are 337 for nitrogen, 267 for phosphate and 347 for potash. In the face of those figures it seems quite conservative to urge, as we are urging, that fertilizer capacity be doubled by 1960.

Now that capacity won't build itself. The Department is working closely with industry to get it pushed ahead as fast as possible. We will need 500,000 tons additional nitrogen capacity as fast as it can be built.

W. A. MINOR

You may or may not have heard that the Atomic Energy Commission has announced that they have found a way of extracting uranium from phosphate rock, when triple superphosphate is produced by the wet process. This announcement will have the effect of greatly increasing output of high-analysis phosphate. Whereas now about 20 percent of our P_2O_5 is in the form of triple superphosphate, in the future these percentages may be reversed. This will, of course, reduce the transportation and handling problem considerably.

In the matter of potash, new plants are going in at the Carlsbad, New Mexico, deposits which provide about 85 percent of our present supply. However, we must push forward the exploration and definition of other deposits and research on the use of those of lower grade which have not hitherto been worked. In potash we are working in the face of a pretty well marked deadline, but fortunately not an immediate one.

As part of this work of looking out for our long-range supply of raw materials, you may have heard of the work of the President's Materials Policy Commission. They went to work about the first of the year, a group of very able men, to study and chart the future of our supplies and uses of basic materials. They will make recommendations probably this fall as to long-range national policies which bear on the use of basic materials. Fertilizer needs are receiving the attention of the Commission. The Department and the Tennessee Valley Authority, along with other agencies, are assisting in this study.

Whether the turn of world events is toward peace or toward war, we will know better where we stand for having this long view.

As you consider the mobilization of the Valley in the defense effort, it is well to note that the needs of peace and the needs of long-range mobilization are fortunately very much alike. We need high productivity, we need efficient marketing and distribution, we need conservation for a productive future. It's obvious what part fertilizer plays in that; it's obvious what part long-time agricultural policies such as you are working up for this Valley area play in meeting these objectives.

Grasslands have their part, too. Better grasslands will provide the solid base we need for the expansion of production of meat and other livestock products necessary to keep pace with the increasing demand for these products which the future will bring upon us. Secretary Brannan, in a speech at Des Moines on Saturday, pointed out that we have a problem which "stated in its smallest terms, is to increase the production of livestock feed." He then outlined how feed production fits into the broad problem, the strengthening of America. Grasses and legumes, he pointed out, have a definite part in our agricultural mobilization.

At the same time, grassland work will maintain and improve our soil resources. These reserves of abundance can always be drawn upon in time of need to increase our production of grain, cotton, and oilseeds with the certainty of greater yields from the improved grasslands suitable for the production of other crops. In these ways, grassland improvements will produce rich returns in which the participating farmers, the people, and the Nation will share--not only in the immediate future, but also in the years which are further ahead.

TIMBER DEPLETION

These values can be translated into lower production costs and higher net incomes for farmers, more food for consumers, improved diet and better nutrition and the conservation of the country's land and water resources. These are objectives which justify us in putting forth our best efforts.

TIMBER DEPLETION THROUGH PREMATURE CUTTING^{7/}

by

Willis M. Baker

Current demands upon the remaining sawtimber resources of the Tennessee Valley are so heavy that large quantities of small, immature trees are being cut for lumber. Mobilization and increased production for national defense will undoubtedly intensify this problem. The situation is serious because our thrifty, fast-growing young timber is the growing stock essential for continued production in the critical years ahead.

Here, briefly, are some of the facts of the situation that cause us concern. TVA's recent study of sawmill operations in the Valley reveals that approximately 3,900 small pine trees, with butt logs 8 inches or less in diameter, are being cut for each million board feet of yellow pine lumber produced. Since annual production of pine lumber has been in the neighborhood of 400 million board feet in recent years, this means the yearly cutting of some 1-1/2 million small pines for lumber alone, in addition to large quantities cut for pulpwood and other products.

Good forest management calls for the harvesting and utilization of some small trees through thinnings for posts or cordwood products, or through improvement cuttings to salvage suppressed, injured, or inferior trees. But everyone loses when the sawmill operator attempts to convert them into lumber, because the costs of logging and sawing small trees exceed the returns. Our sawmill study shows that 24 percent of all trees logged were small, immature trees of good quality which yielded only 4 percent of the total lumber volume. They contributed very little toward current production, but they were an important factor in lowering the efficiency of mill operations. If they had been allowed to grow awhile longer, they would have greatly increased future production, when our need for timber may become even more critical than at present.

Consider the potentialities of a thrifty, fast-growing 8-inch pine of good quality, such as can be grown on most of our forest soils under management. At this size it will produce only 15 to 20 board feet of sawed lumber. If it were allowed to grow to 12 inches in diameter (D.B.H.), which it should do in 15 years (or in a shorter time under favorable conditions), it would yield six to eight times the earlier volume. With another 4-inch increase in diameter, at 16 inches it would produce more than 300 board feet of lumber. In other words, doubling the diameter from 8 to 16 inches increases the yield of sawed lumber approximately twenty times, not to mention its improved quality and greatly increased sale value. Obviously, the woodland owner loses a productive and profitable asset when he allows his immature, fast-growing young trees to be

^{7/} See text, p. 47.

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cut. Although the operator usually does the cutting, the owner can exercise control, if he will. The solution is to sell only marked trees through selective cutting.

This discussion has emphasized the pine situation, but a similar problem exists with hardwoods. Although sawmill operators usually do not cut hardwoods to quite such small diameters, far too many immature hardwoods are being harvested. For instance, the sawmill study disclosed that the average poplar log had grown half of its volume in the last 10 years. In another 10 years its volume and value would have increased very materially. We cannot afford to continue such waste in losing this growth. The woodland owner, the sawmill operator, and the public all lose when the timber industry uses small, immature, rapidly growing trees. Agencies and institutions with responsibilities for resource development should forcefully bring these facts to the attention of all concerned--including the owners of farm woodlands.

REPORT OF TASK FORCE
ON
PREPARATION OF WORK PLAN^{8/}

In addition to the meeting on February 28 to which Dean Cooper referred (appendix, p. 70), the Task Force met in Knoxville yesterday (April 10). The following members of the Task Force were present:

Callahan, Chance, Clayton, Fry, Hursh, McKnight, and Reaves

The Correlating Committee and the standing committees were invited to attend and participate in the meeting. The following members of the standing committees were present:

Committee on Plant Facilities and Products: Crumpler, Peacock

Committee on Rural Facilities, Services, and Industry: Moon, Weaver

Committee on Water and Land Use: Baker, Chance, Gaston

The following persons also attended the meeting:

L. I. Skinner, Ralph R. Will

The following statements were read and discussed:

1. Letter dated March 16, 1951, from Joseph G. Knapp, read by E. P. Callahan
2. Letter of March 19, 1951, and enclosed statement entitled, "Procedure for Development of Agricultural Work Plan," R. M. Reaves

^{8/} See text, p. 53.

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3. Outline of Work Plan for Development of Subwatershed Land-Water Relationships Program within Tennessee Valley, A. S. Fry and R. E. McKnight
4. Comments on Plan for Soil Conservation and Water Control on the Land in the Interest of Watershed Management on Headwater Tributary Areas and Elsewhere as Needed, Charles R. Hursh

It was then agreed to submit the following recommendations:

1. Adopt the work plan submitted by Messrs. Fry and McKnight as a basis for the definition, inventory, and rating of subwatersheds, with the understanding that this plan, together with the other suggestions and recommendations submitted, will be utilized by the Working Committee to prepare a general work plan. This work plan will become effective when approved by the Correlating Committee.
2. Establish a committee to be known as "Working Committee on Preparation of Land-Water Relationship Program for the Tennessee Valley." This committee shall consist of three persons, one to be designated by the Tennessee Valley Authority, who shall serve as chairman; one to be designated by the U. S. Department of Agriculture; and one to be designated by the University of Tennessee, for the seven Colleges; provided that the work for which the committee is established shall constitute the principal assignment of each of its members. The short title of the committee shall be "Working Committee."
3. The Working Committee, operating under the guidance of the Correlating Committee, shall be responsible for accomplishing the formulation of a land-water relationship program for the Tennessee River Basin, to be completed by January 1, 1953. Initially, the Working Committee will break up the job by subjects or fields of work, to show both the framework and scope of the program which is to be formulated. On approval of this prospectus of the job by the Correlating Committee, the Working Committee may, with the concurrence of the administrative official concerned, appoint subcommittees for the various subjects or fields of work, such as the following:
 - A. Definition, inventory, and rating of subwatersheds in the Tennessee Basin
 - B. Farm program by subwatersheds
 - C. Forestry program by subwatersheds
 - D. Extension education by subwatersheds

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- E. Research and investigations by subwatersheds
 - F. Program for control of sedimentation by subwatersheds
 - G. Program for control or alleviation of flood damage on minor tributaries
4. The Correlating Committee will be responsible for the general correlation of the work. In performing this function, the Correlating Committee will make full use of the services of the standing committees of the Valley-States Conference.
 5. The general report will be approved by the principals prior to release or publication.

OUTLINE OF WORK PLAN
FOR
DEVELOPMENT OF SUBWATERSHED LAND-WATER RELATIONSHIP PROGRAM
WITHIN TENNESSEE VALLEY^{9/}
by
A. S. Fry and R. E. McKnight

A Task Force for the development of a plan for the preparation of a definite program covering water and land relationships within the Tennessee Valley by subwatersheds was authorized by the following motion adopted by the Valley-States Conference meeting in Knoxville, Tennessee, November 29, 1950:

I move that arrangements for getting this plan made for the two-year job be left to the Correlating Committee, with the suggestion that the Correlating Committee consider the desirability of accomplishing the making of a plan by engaging a small task force of technicians who will actually put the plan together; and that the Correlating Committee further make the fullest possible use of the present standing committees of the Conference to review that plan before it is presented to the Conference.

With further respect to the work to be done by the Task Force, the proceedings of the Conference include the following, which contains in effect a three-point delegation to the Task Force:

Of broader and more lasting significance, however, is an examination of problems and fitting together of objectives that seem best for the entire Valley. Important objectives of TVA focus on the land-water relationships. Programs to achieve these objectives need to be made consistent with sound programs of farm and timber production. This point is mentioned merely to emphasize the

^{9/} See text, p. 54.

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importance of a careful examination of problems and overall objectives in the Valley. And such an examination, if productive, must consider objectives in the setting of the Tennessee Basin--of particular problems confronted, its special and unique facilities, and its distinctive opportunities.

Subject to the concurrence of this Conference and to the approval of the principals, the Correlating Committee proposes, also, to encourage and assist the initiation of region-wide work to:

1. Identify and set forth the "specific" problems and objectives in land-water relationships within the Valley--by subwatersheds and minor watersheds to the degree necessary.
2. Develop suggestions and recommendations for each type of research work, educational activities and technical and other assistance needed, including the extent to which each may serve to meet the specific problems and attain objectives that fall within the Tennessee Basin development program.
3. Recommend an integrated program of research work, educational activities and technical and other assistance needed for the Tennessee Basin in line with the "specific" objectives mentioned in item 1 above.

With the view of further establishing these broad guides as soon as possible, the committee believes this job should be completed in 1952 and the findings and recommendations published early in 1953.

The Correlating Committee proposes that plans for this work be prepared and submitted to it not later than March 1, 1951. The general plan of work can then be prepared and presented to the Conference at its meeting in April. It is hoped that work can be started in the spring.

Significant in the Conference proceedings and in the delegation is the provision that the Task Force is to make a plan for a program to be developed having to do with land-water relationships in the Valley by subwatersheds. This delegation is not the development of a broad agricultural program but one specifically limited to water and land relationships in small rural watersheds. Accordingly, the plan here suggested for the development of a program considers that its main concern must be land-water relationships as found in the many small watersheds in the Tennessee Valley. It is important to keep in mind that the suggested plan is not the program itself but only a plan suggesting how the program should be developed.

The organization of the Task Force was delayed so that the first meeting could not be held until February 16, 1951. Since then there has been insufficient time to prepare a complete plan as contemplated by the action of the Valley-States Conference in November 1950. This report, therefore, represents an interim report of progress with the expectation that a more complete plan will be prepared and submitted for consideration at the 1951 fall meeting of the Conference.

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The Tennessee Valley must be considered as one region, and it must be kept in mind that the objective of the small watershed program is to ultimately accomplish for the entire Valley a solution of the land and water relationship problems that are essential in the full development of the Valley. However, it is recognized that the solution of these problems is of such a magnitude and complexity that the region must be broken down into smaller component parts. These parts are the small watersheds of varying size which exist throughout the Valley and which make up units of appropriate size for definition of problems and solution of those problems within the small watersheds themselves.

All of these small watersheds have problems concerned with water of one kind or another. Surface runoff and erosion need to be controlled in nearly every watershed. Some few have flood problems that may be solved primarily by engineering methods alone. But in most of the watersheds where flood and other water and erosion problems exist, it is not economically feasible to solve these by engineering methods alone. In most cases, the source of the troubles go back to the land, to eroded uplands that have high surface runoff laden with sediment, to bottomlands incapable of use due to inadequate drainage channels which cannot be kept free from upland sediment. Such water problems as these create situations which are serious, particularly from the standpoint of the future of the small watersheds as economic units which together make up the whole Tennessee Valley.

In suggesting a plan for developing a program, it seems desirable that (1) provisions be made to make an inventory and appraisal of subwatersheds in the Tennessee Valley to find out what are the problems and perhaps the opportunities in these watersheds, (2) to establish objectives for the land and water relationship program, (3) to develop research programs designed to aid in the solution of watershed problems, (4) to develop a remedial program to correct the problems which exist, (5) to outline means of carrying out the program and (6) to measure the results of the remedial program.

A. Inventory and Appraisal of Tennessee Valley Small Watersheds

In making this inventory and appraisal, it is suggested that this be done essentially in the following six steps:

1. Preparation of List of all Small Watersheds

This list would include all small watersheds within the Tennessee Valley. The size of each listed watershed should be such that the watershed provides a homogeneous unit susceptible of isolation with respect to land and water relationships. The area of such watersheds might vary from 25 square miles or less to several hundred square miles. Local small watersheds of less than 25 square miles which occur chiefly along the main streams and principal tributaries should be grouped geographically into appropriate units for consideration and appraisal. The list should be so made that it shows by states and by major tributaries and minor tributaries, the name, drainage area, and general location of each small watershed. Maps and charts should be developed to accompany the listing of the watersheds.

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2. Identification of the Problems in each Subwatershed Concerned in Water-Land Relationships

The problems that should be identified are those which are concerned with the physical aspects of land-water relationships within the subwatershed and with the effects that the present condition of the physical situations have on the social and economic and health conditions in each watershed. Problems that have little or no significance to land-water relationships should not be considered. The identification of the problems of the subwatersheds should not be unduly delayed or extended over a very long time. Accordingly, it is proposed that a corps of technical experts experienced in the several important fields of agriculture, forestry, engineering and hydrology, economics and health and sanitation make a reconnaissance inspection and examination on the ground in each subwatershed for the purpose of identifying the degree of seriousness of the problems in each field of interest. All available pertinent data previously collected in each field would, of course, be made use of in this watershed problem identification. It is believed that making use of the judgment, experience, and accumulated knowledge of such a group of experts as proposed provides the best means for watershed classification.

3. Determination of Numerical Ratings for Each Field of Interest

In order that the degree of seriousness of the problems encountered may be given a numerical value, it is necessary that a uniform rating system be developed to be applied by each member of the corps of experts to the problems in his particular field of interest. Such a rating system should be worked out by the experts in each field for his own particular field, giving due weight to the factors involved. The degree to which the numerical rating should be refined perhaps should contemplate four or five breakdowns in each field, indicating problems of 20 to 25 percent seriousness at the one extreme and 100 percent at the other. In applying the rating in each watershed, each expert would consider the degree of seriousness of the problems in his field and would assign a numerical value selected from the uniform rating classification. The end result would be a numerical rating for any watershed for each of the fields of interest, agriculture, forestry, engineering and hydrology, economics, and health and sanitation which ratings would show the seriousness of the problems encountered in each field of interest in that watershed. For example, after a reconnaissance of Sunny Creek Watershed and its problems, the following numerical ratings might result:

Agriculture	- 80
Forestry	- 60
Engineering and Hydrology-	60
Economics	- 40
Health and Sanitation	- 20

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4. Determination of Composite Rating for Each Subwatershed

Having determined a numerical rating for agriculture, for forestry, for engineering and hydrology, for economics, for health and sanitation for each subwatershed, the next and final step in the rating procedure is to combine the ratings for each of these fields to give a composite or overall numerical rating for the subwatershed. This composite rating must be based upon a weighted average of the ratings for the individual fields. Agriculture and forestry ratings must be adjusted proportionately for the area of each watershed under each of these major uses. The proper weight to be given in the composite rating to each field must be given more consideration than has been possible at this time. However, the following illustrates how a composite rating might be determined using the individual ratings given under the previous step:

	<u>Individual Rating</u>	<u>Weight</u>	<u>Factor</u>	<u>Total</u>
(Agriculture	80	4	80%	256
(Forestry	60	4	20%	48
Engineering and Hydrology	60	4	-	240
Economics	40	1	-	40
Health and Sanitation	20	1	-	20
Composite Watershed Rating				<u>604</u>

5. Listing of Watersheds in Order of Numerical Rating

Finally, there should be a listing of the watersheds in order of their composite numerical rating, perhaps by states, perhaps by main streams and tributaries or otherwise as may seem desirable. This list will make it possible to select those watersheds where the overall problems are the greatest with respect to water and land relationships and their effects. The list will provide a ranking of watersheds so that, if it is desired to do so, an action program may be carried out progressively treating the watersheds having the most serious problems first and then proceeding to those of decreasing seriousness. The most critical watersheds in each state will also be identified which will make possible selection of watersheds for action programs on a state basis as well as on a Valley-wide basis.

6. Classification and Grouping of Problems by General Types

The problems for all of the subwatersheds will doubtless group themselves into a number of general types. For purposes of development of research programs and of measures for correction of problems, it will be helpful for this grouping to be made as a part of the work of the corps of experts.

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B. Objectives of Land-Water Relationships in Subwatersheds

Under the directive from the Valley-States Conference, the identification of specific problems in land-water relationships within the Valley by subwatersheds is to be accompanied by objectives. It is assumed that this means the objectives for a program designed around land-water relationships within the subwatersheds of the Valley. It is also considered that these objectives must be those which are consistent with a practical farming system on the land, and objectives that do not fit into this framework are not considered. For example, it is thought that a substitution of winter pastures, deep-rooted legumes such as alfalfa and sweet clover, and improved permanent pastures for a substantial portion of row-crop and lespedeza acreage would improve land-water relationships and would at the same time be a valuable substitution for farmers to make. It is thought that the following objectives meet the criteria:

- (1) The distribution of runoff seasonally is to be changed, if possible, to make more water available to the streams in the summer and early fall when it can be gainfully used by the TVA for production of hydroelectric power.
- (2) The amount of water available to the streams should not be decreased except during such times as water would be wasted or not usefully employed by the Tennessee Valley system of river projects.
- (3) The total amount of water delivered to the streams should not be increased during the flood season of the year when such water cannot be used profitably but might increase the flood hazard.

C. Research Program

The inventory and appraisal of problems connected with land-water relationships in the subwatersheds will show the nature and type of these problems that need solution. This affords a sound basis for planning a research program. Research would not be undertaken on problems where in the judgment of experts the prospects of making profitable use of research results are poor, but research would be confined to those problems where probability of making good use of the results appears best. The results of such a research program should be the basis for planning what corrective measures are to be undertaken on the land. A significant part of the research will accumulate basic data on soil-plant-water relationships as these are affected by various land-use systems and conservation practices. The techniques of hydrological engineers, foresters, agronomists, and agricultural engineers will be brought together in this problem. The tributary watersheds in which work is proposed have sufficient diversity of soils, slopes, vegetative cover, etc., to offer excellent opportunities for the collection of significant hydrological data and study of possible shifts of land use.

Other research needed to advance full watershed development may include studies of such problems as the protection, production, processing, and utilization of local products and resources; control of erosion, stream siltation, and pollution; social, economic and industrial development; and sanitation and public health.

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In order to be most useful in connection with the planning of corrective measures to solve the problems of the subwatersheds, the research program may be broken down into two parts, (a) that which is known, (b) that which needs to be known.

Under the first classification the results of small-scale scientifically controlled research on test plots conducted by the state experiment stations coupled with large-scale practical test-demonstration farm experience throughout the Valley on various soils and under many different conditions should be brought together and prepared in a usable form for aid in watershed cover and management planning. The results of such watershed studies as have been carried out, both within the Tennessee Valley and elsewhere, should be reviewed and useful information brought together that might be helpful in planning work to be carried out immediately in the subwatersheds.

With respect to that vast field of unknown but needed information, the specific research work that should be undertaken will be identified more clearly than is now possible after the inventory and appraisal of problems have been completed. However, research requires a considerable amount of time and the watershed action program cannot wait for completion of the inventory for research projects to be set up and undertaken. Therefore, it is imperative that a research program should be initiated as early as possible based on anticipated needs that can be identified now by those familiar with the work to be done. Hydrologic research related to land cover of various kinds and land management practices of various types are needed to give results of the various cover and practices in terms of land-water relationships. A preliminary listing of some research problems that could well be started is being prepared by the Task Force and will be part of the next report of the Task Force.

D. Remedial or Corrective Program

The ideal way to develop a corrective program for the various watershed problems would be to wait until the results of research projects are known and then make use of these results in planning the changes in watershed cover, management, and other improvements so that the desired objectives may be achieved. Obviously, the action program cannot be delayed until the research results are available, so it is necessary to proceed on the basis of present knowledge and of those results of research which are known.

Planning the work to be done in each watershed should be an integrated effort by agriculturists, foresters, engineers, technicians in other skills, and representatives of local interests. It is very important to keep in mind in planning of the work that the objectives are directly concerned with land-water relationships, and the program should be aimed definitely to that end. For this reason it is essential that the engineering aspects of water control wherever it is found not be overlooked. The plan for each subwatershed and its parts down to a single farm should be one in which all technical fields have had an appropriate part and are in agreement with regard to the beneficial effects of the plan on land and water relationships. No one science

OUTLINE OF WORK PLAN

can solve the problems which exist and the attempt to do so will only result in failure.

The remedial program should be set up objectively in steps, each step constituting definite planned accomplishments to be achieved in definite periods of years. The total job in a watershed may, for example, require an estimated 15 years for completion. The whole job then would be broken down into five steps of 3 years each. When the plans for the watershed are made at the appropriate time, the work to be done and results expected in each 3-year period should be definitely stated. As the work in the watershed takes place, progress can then and should be measured in quantitative terms.

In making the plan for each watershed and for the group of watersheds that will be in the action program at any one time, it is important to keep in mind the TVA fertilizer plants at Muscle Shoals and Godwin. Maximum use should be made of the products of these plants to improve land cover and soil management so that better land and water relations will result. Unit and area test demonstrations should be used to develop and demonstrate systems of farming that make maximum use of desirable sod crops. TVA fertilizers should be made available for purchase for selected uses at appropriate discounts by all farmers in such watersheds. The kind of agricultural crops that are thought to be desirable to promote good land-water relations must be kept in mind, and preference in fertilizer allocations to watersheds and to individual farms should be based on types of crops that are to be encouraged.

In the development of plans for, and in the execution of, the agricultural program, maximum local participation should be encouraged at all times. The plan should provide for coordination of effort of all agricultural agencies working with farmers in the area.

E. Educational Activities

The corrective program will specifically indicate changes and improvements that are desirable and contemplated in connection with the watershed program. It is contemplated that there will be developed a plan for carrying this program to the people in the watershed by means of various educational activities. These are to be determined and set forth in the plan.

F. Carrying Out the Program

The President's Water Resources Policy Commission has recommended that water resource project functions for a river system be consolidated in a single government agency. The Commission's report points out that this has been done successfully by the Tennessee Valley Authority. Following this reasoning, the primary responsibility for carrying out the program of improved land and water relationships in small watersheds in the Tennessee Valley and supplying leadership to do so is logically that of TVA. However, the services and experience of all Federal and State agencies that can contribute to the program should be utilized. The landowners obviously must be given prime consideration in carrying out the program for better land-water relationships for this must be done in harmony with the best interests of the owners.

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Within TVA the experiences and abilities of those organizations concerned with agriculture, forestry, engineering, health and sanitation, and social and economic conditions are available and should be used to carry out TVA's responsibilities in these fields.

In addition, the Department of Agriculture is in a position to make valuable contributions through the Production and Marketing Administration, Soil Conservation Service, Forest Service, Farm Credit Administration, and probably other branches.

The state colleges, through their extension services and experiment stations, are necessarily an important part of the program execution.

In the final report of the Task Force and in the program as developed under the suggested plan, it is contemplated that more detailed information will be given with regard to methods, techniques and organization to be followed in obtaining the desired objectives. Perhaps there should be an overall directing panel composed of representatives of TVA and other agencies. In any event, the work will be under the Valley-States Conference with such administrative devices as it may determine upon.

G. Measurements of Results

It is important that the results of the corrective program be measured accurately, both with respect to the actual land and water relationships and also with respect to the effect of these changes on the social and economic conditions in each watershed. Measurements of change should be made in the fields of hydrology, agriculture, forestry, and socio-economics so that these will constitute a definite record of what takes place in each of these fields as a result of the carrying out of the action program. Definite knowledge of progress toward the solution of major problems in each of these fields will be useful in periodic replanning of the program and in shifting emphasis to keep it in balance insofar as feasible.

LIST OF MEETINGS

<u>No.</u>		<u>Place</u>	<u>Proceedings</u>
1	1933, September 25	Knoxville, Tennessee	Typed, 2 pp.
2	1933, October 7	Knoxville, Tennessee	Typed, 1 p.
3	1934, July 6-7	Chattanooga, Tennessee	Typed, 8 pp.
4	1934, October 27-28	Muscle Shoals, Alabama	Processed, 13 pp.
5	1935, December 12	Chattanooga, Tennessee	Typed, 15 pp.
6	1936, June 26-27	Chattanooga, Tennessee	Processed, 20 pp.
7	1937, February 6	Knoxville, Tennessee	Typed, 7 pp.
8	1937, July 10	Knoxville, Tennessee	Typed, 10 pp.
9	1937, November 3	Knoxville, Tennessee	Typed, 5 pp.
10	1938, April 25	Knoxville, Tennessee	Typed, 13 pp.
11	1938, October 4	Atlanta, Georgia	Typed, 10 pp.
12	1939, April 4	Birmingham, Alabama	Typed, 9 pp.
13	1939, October 3	Chattanooga, Tennessee	Typed, 10 pp.
14	1940, April 2	Knoxville, Tennessee	Processed, 17 pp.
15	1940, October 1	Asheville, North Carolina	Typed, 9 pp.
16	1941, March 4-5	Florence, Alabama	Processed, 32 pp.
17	1941, October 28	Atlanta, Georgia	Processed, 29 pp.
18	1942, March 3	Roanoke, Virginia	Processed, 13 pp.
19	1942, October 6	Knoxville, Tennessee	Processed, 44 pp.
20	1943, May 13	Atlanta, Georgia	Processed, 20 pp.
21	1944, April 3	Knoxville, Tennessee	Processed, 61 pp.
22	1944, October 3	Birmingham, Alabama	Processed, 74 pp.
23	1945, April 3	Atlanta, Georgia	Processed, 67 pp.
24	1945, October 5	Chattanooga, Tennessee	Processed, 88 pp.
25	1946, April 3	Atlanta, Georgia	Processed, 77 pp.
26	1946, October 2	Biloxi, Mississippi	Processed, 93 pp.
27	1947, April 2	Abingdon, Virginia	Processed, 86 pp.
28	1947, October 1	Knoxville, Tennessee	Processed, 71 pp.
29	1948, April 7	Lexington, Kentucky	Processed, 65 pp.
30	1948, October 6	Asheville, North Carolina	Processed, 94 pp.
31	1949, April 6	Birmingham, Alabama	Processed, 81 pp.
32	1949, October 5	Atlanta, Georgia	Processed, 98 pp.
33	1950, May 12	Memphis, Tennessee	Processed, 155 pp.
34	1950, November 29-30	Knoxville, Tennessee	Processed, 114 pp.
35	1951, April 11	Knoxville, Tennessee	Processed, 92 pp.

